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THE NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS

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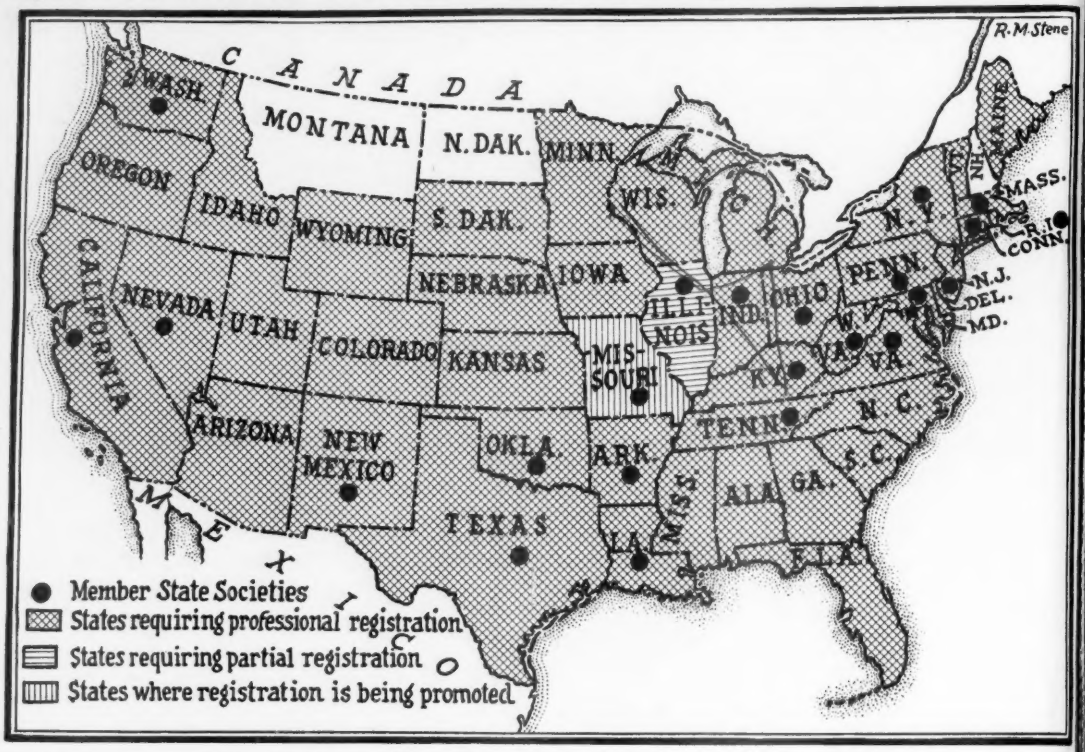

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THE COVER

Photo by Acme Newspictures Inc.

The most interesting and intriguing news at the moment is the visit of Under-Secretary of State Sumner Welles to European warring nations, as personal envoy of President Roosevelt—apparently for the purpose of determining the military and economic status of these countries, and possibly to discover some basis for the cessation of armed war.

Our cover shows Mr. and Mrs. Welles sailing on the Italian Liner Rex, bound for, first, a conference with Premier Mussolini. The results of this visit may be a factor in determining whether a President of the United States will, for the first time, seek a third term.

The American Engineer assumes no responsibility for statements or opinions expressed by contributors. Their names identify the source of the same.

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EDITORIAL • • •

INTERCHANGE

With our most recent national convention held in Ohio, and with our new National Secretary coming from that State, there should naturally follow a more intense activity in the mid-west state societies.

Our meeting at Columbus quickened interest in that State on the aims and activities of the National Society of Professional Engineers, which must eventuate in a much larger membership in the Ohio Society of Professional Engineers. This movement will be contageous in Indiana and that State will grow. The "conservative east" will hold its recent gain, and gradually we gain strength.

Texas is becoming exceedingly active and strong, standing firmly for State Autonomy and for "pure" state societies, with no hybrid affiliation.

We are becoming a mature Society—can speak our minds freely, and criticise each other for the betterment of the whole.

Editorially, we think there should be a little more guidance from the top—outlining of general policies—uniformity of procedures—gradually pushing model laws—working closer to the common aims with our brother professions—strengthening the hand of our state registration boards and helping them function—improving ethics—raising compensation.

At the national convention a symposium was held on the activities of the small suburban chapters, the large city chapter, the state society, the national society—and again we were impressed with the need for constructive local chapter program and policy.

This is the foundation of our whole being—the activity and benefits derived in the local chapters in our organization, bound together by a national society.

Let us have submitted to THE AMERICAN ENGINEER from individual chapters, large and small, throughout our twenty-three state groups, an outline of your chapter activities for community and self—and from state societies, your activities for common good.

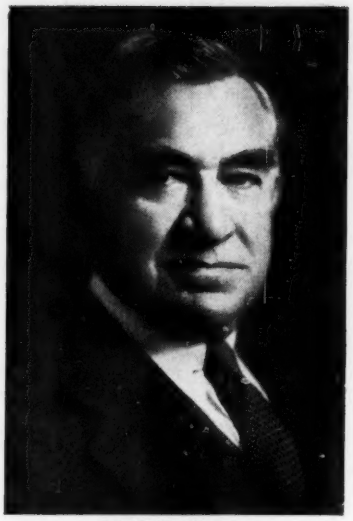
By the interchange of these ideas and accomplishments, we will grow in strength.

ROBERT HALL CRAIG,
Editor.

NEW OFFICERS

of the National Society of Professional Engineers for 1940

Elected at the Fifth Annual Convention in Columbus, O.
February 8, 9 and 10, 1940



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N.S.P.E. Holds 5th Annual Convention in Conjunction With Ohio Society's 61st Annual Conclave, Columbus, Ohio, Feb. 8-9-10, 1940

Comments on National Convention by Arthur V. Sheridan, Associate Editor of THE AMERICAN ENGINEER

The recent joint convention of the Ohio and National Societies of Professional Engineers held in Columbus, Ohio, February 8, 9, 10 was an occasion, perhaps, unsurpassed in the annals of engineering gatherings.

Attended by nearly two thousand persons from various parts of the country, it was the recipient of special recognition from governors, mayors, justices of the higher courts, distinguished journalists and outstanding members of the profession. The Governor of Ohio, the Mayor of Columbus, the Chief Justice of the Supreme Court of Ohio, the nationally known editor of the *Toledo Blade*, Dr. Arthur E. Morgan, former head of the Tennessee Valley Administration, Col. Robert S. Beightler, Director of Highways for the State of Ohio, and deans from at least four universities were among those who addressed the convention on selected topics. Included in the list of those who telegraphed or telephoned in person their regrets or congratulations to retiring President Perry T. Ford and President-elect John C. Riedel, were Governor Holt of West Virginia, Governor Cochran of Nebraska and Mayor Kelly of Chicago.

Almost every phase of professional activity was the subject of discussion at the various meetings which began with a directors conference of the Ohio Society on February 7 and concluded with a joint director and business session of the National Society on Saturday, February 10. In addition to the various assemblages, there were radio programs, over major net works, which included addresses by President-elect John C. Riedel and Dr. Arthur E. Morgan, together with round table discussions participated in by retiring President Perry T. Ford, past President Arthur V. Sheridan, Dean E. H. Holbrook, University of Pittsburgh, and Loran D. Gayton, City Engineer of Chicago and President of the Illinois Society of Professional Engineers.

A canvass of the ballots for officers indicated that only a very small and scattering vote was cast for persons other than those designated by the Nominating Committee. Commissioner John C. Riedel, Chief Engineer of the Board of Estimate and member of the City Planning Commission of New York, was elected President for the coming year. He was presented by retiring President Perry T. Ford of Ohio who delivered a sincere and impressive valedictory in turning over the gavel to his successor. Engineer Riedel, in carefully chosen and effective language, outlined his general policies for 1940. Other officers elected were Vice-President J. W. Beretta, Texas, Donald H. Walker, Indiana, Leo H. Cleary, Washington, D. C., Samuel I. Sacks, Pennsylvania, and Treasurer Walter L. Simpson, Washington, D. C.

Chicago was selected as the scene of the next convention. A strong personal plea by telephone from Engineer Mayor Kelly, who had City Engineer Gayton formerly present his invitation to the convention, resulted in a selection which was finally unanimously accepted, after representatives of New Jersey and other states had urged the acceptance of an attractive appeal from Atlantic City.

The Society authorized the President to appoint a Patent Committee instructed to collaborate with state and national groups sponsoring legislation which contemplates the elimination of a continuing miscarriage of justice which has accompanied patent and copyright matters for more than a century. The injury done to inventors and authors as a result of legal frustration over these many years is incalculable. Efforts to remedy weaknesses in the existing laws deserve unstinted public and professional support.

Among the resolutions adopted, two are of such nature as to merit reproduction in this brief commentary. These resolutions were in a large measure prompted by expressions from distinguished laymen who addressed the convention and were reinforced by a legislative program already sponsored by the Ohio Society. They are:

RESOLUTION

Re-Oath of Service

WHEREAS the regulation of the practice of a legally recognized profession is a function of the state and is predicated upon the protection of life, health and property, and

WHEREAS the right to engage in the practice of such profession is a privilege granted by the state to an individual which in substance makes the practitioner an agent of the state, and

WHEREAS the obligations attendant upon the practice of the profession of engineering demand character and a sense of social responsibility of the highest order,—now therefore be it

RESOLVED that it is the consensus of the membership in attendance at the Fifth Annual Convention of the National Society of Professional Engineers in session at Columbus, Ohio, February 8, 9 and 10, that admission to the practice of professional engineering should be accompanied by an oath of service similar to that required for admission to the practices of law and medicine, and be it further

RESOLVED that the National Society of Professional Engineers does herewith recommend to its several member state societies the consideration of legislation or procedure prescribing an oath of service (to society, to state and to profession) to be administered to every person hereafter admitted to the practice of professional engineering.

RESOLUTION

Re-Uniform Examinations An Aid to Reciprocity Between States

WHEREAS the professional engineer, under existing conditions, encounters more difficulty than the practitioners of certain other professions in the matter of practicing in more than one state, and

WHEREAS this condition is primarily attributable to the absence of uniform and complete examinations in the several states, and

WHEREAS admission to the practice of professional engineering demands an investigation of character and specialized knowledge at least equal to that of other legally recognized professions, and

WHEREAS the policy, long in vogue in other professions and increasingly the trend upon the part of State Engineering Boards, of requiring thorough, comprehensive and well conceived written examinations (supplemented

by such other requirements as may be approved) as the definite means of establishing the ability of a candidate to expound and apply engineering knowledge,—now therefore be it

RESOLVED that the National Society of Professional Engineers in convention assembled at Columbus, Ohio, February 8, 9 and 10, does hereby urge its member state societies to take steps toward the establishment of written examinations comparable to those required in other professions, and be it further

RESOLVED that the National Society of Professional Engineers shall collaborate with the several state societies, and shall seek assistance from the National Council of State Boards of Engineering Examiners, with a view to establishing such uniformity of examination and qualification as will tend to promote reciprocity between states throughout the country.

A significant feature of the Ohio Society business session was the tabling of a motion which would have rescinded a previous action requiring membership in that society, as is the case generally in other states, to be a three phase reciprocal affiliation whereby a member of the local chapter automatically accepts membership in state and national societies, thus integrating the aims, activities and policies of all and establishing a real trinity of interest in the affairs of community, commonwealth and nation. The debate on this subject was extended, unrestricted and interesting. The opinions of opponents and proponents alike were freely presented. Past President Sheridan and retiring President Ford of the National Society were accorded the privilege of the floor and pleaded for unity of purpose, of opportunity and of obligation. The final vote indicated a ratio of five to one in favor of the threefold membership. The forum was ably conducted and the arguments well presented by both sides. The result was graciously accepted and the value of the professional society procedure, whereby the opinion of state and local groups is required for the formulation of policy, splendidly substantiated. At the same time, one of the most troublesome problems of the National Society has apparently been settled. An organization of the caliber of the Ohio State Society of Professional Engineers merits the emulation of other engineering groups.

Those who had the good fortune to be present were unanimous in voicing the opinion that the convention was most impressive. An elaboration of these comments will be found in the proceedings and in the addresses some of which, it is hoped, will appear in the AMERICAN ENGINEER.

Biography of a New Vice-President of N. S. P. E.

Leo Hayes Cleary was born in Waterbury, Connecticut. He attended grade and high schools in Ansonia, Connecticut, and was graduated from the Engineering School of the Catholic University of America, Washington, D. C., in June 1916, with the degree B.S. in Electrical Engineering.

For several years, following his graduation he was engaged as draftsman and junior engineer on projects for the Bureau of Yards and Docks, Washington, D. C., working on plans for power plants, and electrical systems for submarine base at New London, Connecticut, power plants at Norfolk, Virginia, Philadelphia, Pennsylvania, and other stations.

Following this, for a period of ten years, he was engaged as estimator and electrical engineer in the electrical contracting field, and as consultant.

For the past ten years, he has been engaged in the consulting field exclusively, in charge of all design, specifications and supervision of installation of all electrical work for Mr. George A. Weschler, Consulting Engineer, of Washington, D. C. In this connection, work included surveys, reports and design of electrical systems for all types of buildings and for underground electrical systems. Some of the more outstanding of these achievements are: The New $10,000,000.00 House of Representatives' Office Building, Washington, D. C., the $3,000,000.00 Addition to the Senate Office Building, Washington, D. C., St. Mary's Seminary, Baltimore, Maryland, U. S. Reformatory, at Chillicoths, Ohio, the Williamsburg Restoration, Williamsburg, Virginia, including a complete underground distribution system and the electrical installation for half of the $4,000,000.00 air conditioning system for the United States Capitol Group.

He is a member of the A. I. E. E., the Washington Society of Engineers, the Society of American Military Engineers, and the Washington Board of Trade. He is also a member of the Washington Building Congress Electrical Code Committee, engaged in the 1940 revision of the Electrical Code for the District of Columbia. He has been successively secretary, National Director and President of the D. C. Society of Professional Engineers. He is a registered professional engineer in the States of Connecticut and Pennsylvania, and is at present a member of the firm of Weschler and Cleary, Consulting Engineers, of Washington, D. C.

Edward Larson, Cincinnati, Ohio Named Executive Secretary of N.S.P.E.

(See photograph on page 3)

Edward Larson, Cincinnati civil engineer, and past vice president of the Ohio Society of Professional Engineers, took over the Washington, D. C. office of the National Society of Professional Engineers on March 1st, as the new Executive Secretary of the national society.

The appointment was made in Columbus, Ohio, during the national convention in February, by the Board of Directors of the national society. Mr. Larson succeeds Willard S. Conlon, who resigned to go into private practice as a consultant in Washington, D. C. and Stamford, Connecticut.

Born in Minneapolis, Mr. Larson studied engineering at the University of Cincinnati, and has been consultant in his own offices there since 1933. He was formerly an engineer with the United States Steel Corporation at Birmingham, Ala., and the American Rolling Mill Company at Ashland, Ky.

He is a past chairman of the Cincinnati Chapter of Registered Professional Engineers, and is now a director of that organization. He has served also on the methods committee of the Allied Construction Industries; as secretary of the engineering committee of the Traffic Safety Council, and as a director of the Engineers' Club in Cincinnati.

Greeting to the Members of N. S. P. E. From the New Executive Secretary

It would give me great pleasure to make my bow to each of you individually. Since this is obviously impossible I take this means to say, "How do you do." I hope that in return you will have a feeling of personal friendship and warmth for the headquarter's staff of your Society.

I am fully conscious of the great honor conferred upon

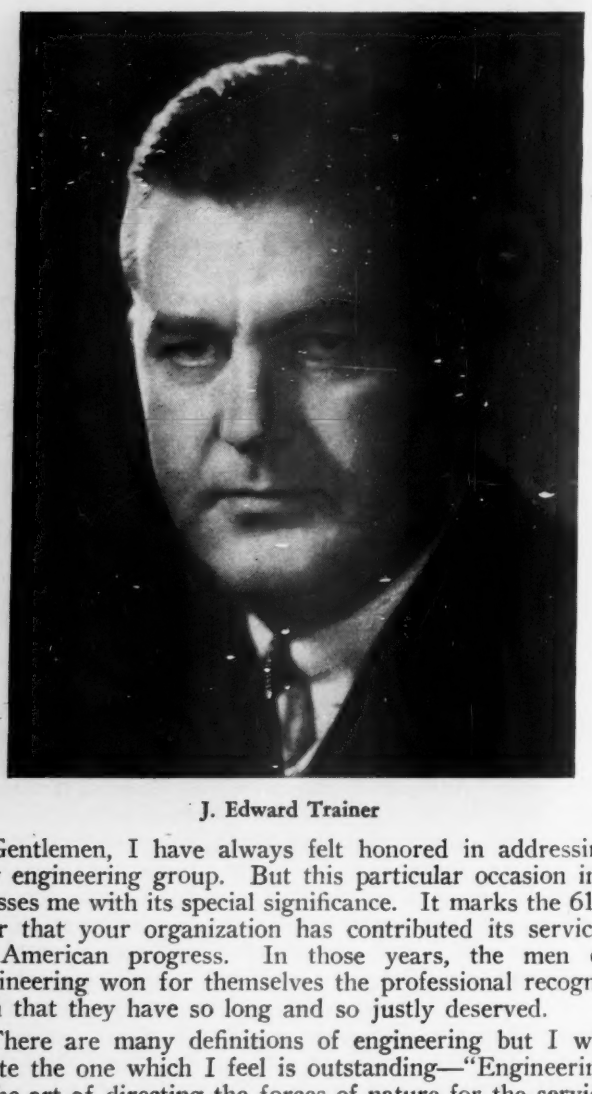
(Continued on page 27)

The Engineer in Business

By **J. EDWARD TRAINER**

General Production Manager, The Firestone Tire & Rubber Co., Arkon, O.

Delivered before joint meeting of the 5th Annual Convention of National Society of Professional Engineers and 61st Annual Convention Ohio Society of Professional Engineers, Columbus, Ohio, February 8, 1940.



J. Edward Trainer

Gentlemen, I have always felt honored in addressing any engineering group. But this particular occasion impresses me with its special significance. It marks the 61st year that your organization has contributed its services to American progress. In those years, the men of engineering won for themselves the professional recognition that they have so long and so justly deserved.

There are many definitions of engineering but I will quote the one which I feel is outstanding—"Engineering is the art of directing the forces of nature for the service of man." This definition to me embodies all the varying phases of engineering and expresses the idealism which I feel is a deeply rooted part of our profession. As a result of his steadfast determination to follow this ideal, the engineer today has attained a high position in professional circles.

It is not immodest to say that world progress and civilization have depended on and advanced with engineering progress. The modern engineering profession may be said to have started with the railroad era. Shortly thereafter the construction of railroads was begun in practically every civilized country. The services of hundreds of engineers were at once needed in connection with these works and engineering began to grow from the artisan status to one of professional responsibility.

Although the engineer was always foremost in the task of making the world a more comfortable and convenient place in which to live, his accomplishments not always met with the reception they deserved. In fact, in earlier days the engineer often carried on in the shadow of public doubt and derision.

Did you ever stop to think how many of our great engineers worked under the most discouraging handicaps? Richard Arkwright had to flee from Lancastershire under threat of death and establish his spinning machinery secretly in Nottingham. But Arkwright was the man who made it possible for every one of us to have more than one shirt to his back.

The spinning jenny that Hargreaves made was broken to pieces by the mob. Another mob smashed that indispensable loom invented by Jacquard, and the inventor himself was dragged to the waterside and very nearly drowned. But his looms made the City of Lyons prosperous.

In our own country, Fulton engineered the first steamboat, but is was heralded as "Fulton's folly." Whitney built the first cotton gin, but the people railed at him because they thought it would devaluate the colored slave.

But it's not necessary to go back so far to these extreme cases to show that the status of the engineer has not always been what it is today. It was not so long ago that an engineer to many people was only a man who regulated the apartment house furnace or tended a steam boiler. His professional standing and work were known only to a few. Proper recognition of the creative service he was rendering had not been given him.

But today the fortunes of the engineer are changing. He has attained a new status in the business and professional world. And with that new status has come new responsibility.

The engineering group in America is a relatively small group. I like to think of the engineer as among "those thinking few" of America who contribute in a tangible measure to a better and more progressive world.

After all, our purpose as engineers and scientists is simple and easily defined. In the broader sense, it's to find means of creating wealth and opportunity where they have not existed before.

Our economic progress, today, is measured proportionately by the effectiveness with which we apply engineering and science in the production of new goods, better goods and better service.

When we free more men from the drudgery of routine and give them time for education, for research and for creative effort, we have definitely raised the standard of living. Human wants are continually increasing and the true measure of our engineering success is our ability to supply these wants.

A hundred years ago our average wants numbered about 50. Of these, about 15 were regarded as necessities. Today, the wants of the average individual are rated at nearly 500 and we regard 94% of them as necessities. The meeting of these wants, requires engineering talent.

Never in the history of the world has the demand for engineering talent been so insistent. And by the same token, never has been opportunity so pronounced.

The order of things today is changed. The pace of yesteryear has been speeded up. Routine and system, of course, have their place. But only decay can be expected of stiff backed uniformity and routine that fails

to be flexible and progressive in its thinking. Competition is keener than ever before and creative thinking is at a premium.

Few people face the future. Fewer still are willing to grapple with new problems as they arise. Vision is given only to those people who think—those who see new opportunities, who recognize new needs.

Stevenson could see the railroad before a rail was laid. Sailing ships were still plying the ocean when Cunard looked ahead and saw great steamship lines.

Orville and Wilbur Wright envisioned man with wings at a time when it was folly to speak of such a thing.

These men were engineers. They were creative thinkers. And through their thinking, millions of people have been put to work and countless millions have been enabled to enjoy a richer and finer life.

Charles F. Kettering, master engineer, summed up our situation when he said "the trouble with America is not overproduction of goods but underproduction of ideas." He also is responsible for the question as to why it took so long to get an idea from the outside of a man's head to the inside when you could send a message around the world in a few seconds. The answer, of course, is the relative density of the materials.

One-fourth of all employees in American industry today owe their jobs to 18 new industries which have been developed by engineers and scientific research in the past half century. In one large company alone more than 60 per cent of its present volume of business is due to new products introduced in the past decade. Another engineering job.

On the pages of our newspapers, between the covers of our national magazines—in the speeches of leading men, and in the commonplace talk of all our people, there is one word that has, in the last few years, acquired great significance. That word is "unemployment."

Today it is estimated there are 8½ million people in the United States who are not working. Where can they turn their hands to earn an honest, comfortable living? Could it be that some engineer or group of engineers hold part of the answer to that question? Suppose our creative ability should develop another horseless carriage. Let us analyze the automobile industry.

No so many years ago only a handful of men were employed in the automobile industry. They are inconsequential insofar as general employment figures were concerned. But the horseless carriage became the automobile. Engineers turned their heads and their hands to improvement of the motor car. Employment started with a few thousand. The few thousand soon multiplied into millions.

It doesn't necessarily stand that we would have to create one mammoth new industry like the automobile to help in solving unemployment. An engineering program that would offer several smaller new industries would be equally effective, and would take less time for it to reach maturity.

Every advancement in the automotive field brought a corresponding increase in its requirement of human services. As the automobile industry grew, the tire industry kept pace; steel production was right alongside; highway engineers, surveyors, and builders changed wagon tracks and dirt roads into great ribbons of highways and broad boulevards.

Cotton growers in the South, farmers in the West, and miners beneath the ground—all saw their labors become more valuable as the infant industry steadily assumed the proportions of a giant.

Buggy salesmen turned to selling the new vehicle. The blacksmith shod fewer horses, finding a better source of revenue in automobile repair work. Motor car dealers added thousands yearly to their sales forces and garages took on more and more mechanics.

Gasoline stations began to appear almost over night until today there are 400,000 places in the United States where a man can drive in and say to the attendant, "Fill her up."

More than 6,000,000 people earn their living from the automobile business and its allied industries—and any new industry that would *employ* 6,000,000 people would about solve our *unemployment* problem.

What is of great importance to our profession is that the automobile industry is an engineers industry. Engineers can take more credit for its success than any other group connected with it. It is their planning, creative thinking and execution that is responsible for better cars at lower prices. And what is more, they are getting the credit that is due them.

Here, too, is demonstrated the opportunities for the engineer in the business world. Many have become outstanding successes, not only in their particular field, but as executives. Ford, Kettering and Chrysler are but a faw that could be named. There are hundreds of others whose names are also familiar among us.

The automobiles of thirty years ago can hardly be compared in value, serviceability and economy of operation with the car of today. They have a life now of ten years due to engineering skill and may have as many as five or six owners. This long life has enabled millions of families to enjoy a motor car that otherwise could hardly afford one.

Car registrations have now passed the 30,000,000 mark. Automobile authorities estimate that this will increase to 40,000,000 in the next twenty years. But what is more important they predict that while the registration gain in that period is only 30 per cent the miles they travel will be double what it is today.

Just as we knew little about what an automobile was three decades ago so we know little about what a real highway system is today. We have come a long way since the turn of the century in road building and our engineering efforts with highway construction are not to be taken lightly. But the highway of the future offers a challenge and great opportunities to the engineering profession. The general public is more interested than ever. One of the most popular exhibits at the New York World's Fair last year was a diorama depicting a new conception of our future highway system. Many thousands of engineers are not engaged in road building work, but many more thousands will be employed for the task ahead.

The great growth of the rubber industry with which I am connected is due in a large measure to the use of the automobile. But its horizon is being rapidly broadened by the introduction of new products, all the result of engineering and research. Ten years ago products other than tires accounted for 15 per cent of the Firestone business. Today that has been increased to 30 per cent.

In addition we have increased our business another 5 per cent by the introduction of new types of tire. Engineering genius is responsible for the farm tire which in a few years has grown to a business of $25,000,000 annually. Our special tires for road building equipment are expanding rapidly and in this field, too, engineering has risen to new heights. It was little more than two decades ago that no pneumatics were built for trucks. Today almost every truck uses pneumatics and we have recently installed equipment that will build a pneumatic tire ten feet in height and weighing 3,000 pounds. Tires of slightly lesser size with a load carrying capacity of 20

tons each for earth moving vehicles are already in regular production.

Here again is demonstrated the enchanted circle of engineering achievement. Engineers are building more efficient equipment, giving more employment because more of it is sold, and in turn making it possible to build more and better roads, thus giving work to more people.

There is another new industry, that is almost entirely the creation of engineers. This is radio. It was only fifteen years ago that it began to bid for recognition in the industrial world. Its growth has astonished its most optimistic supporters.

In 1939, $285,000,000 worth of radios were sold in the United States. Another $83,000,000 was spent in advertising by radio. Approximately 50,000 people were directly engaged in manufacturing radio equipment last year.

Equally impressive is the dynamic growth of another great industry that started with a germ of an engineer's idea—electrical refrigeration. In the year just closed, this great industry had a total sales volume of over $400,000,000 employing 100,000 people.

Through the utilization of electrical machinery 260,000 wage earners had steady employment last year, and 45,000 retail dealers were kept in business by the tremendous volume of trade in electrical equipment.

Notwithstanding the spectacular business records of some of the newer industries, there is always demand for engineering enterprise in somewhat older lines. Just by way of example, let's look at the record of aviation.

At the turn of the century the Wright brothers knew the principle of the heavier-than-air machine. On December 17, 1903, they were successful in proving their principles by making the first airplane flight at Kitty Hawk. Thus the aviation industry started off not many years behind the automobile.

Unlike the automobile, its progress was slow.

Then the World War stimulated engineering minds and more talent was turned to improvement of the airplane for military purposes. In a period of three years, the efficiency of the airplane was improved more than it had been during all the previous years of its existence.

Tried and proved under the stress of military combat, the airplane was definitely established as a rapid, safe and efficient means of transport. But it wasn't until eleven years after the signing of the Armistice that the fire regular airline passenger service was inaugurated in America. That was in 1939, when airplanes carried 173,000 passengers.

Then engineers went to work in earnest and developed the tri-motor plane which began carrying passengers in 1930. That year the regular airlines carried 420,000 passengers, nearly three times the number that had been carried the year before.

There was a gradual increase in air travel for the next four years. But it was not particularly spectacular. There was still more work for the engineer before greater increase in passenger traffic could be expected.

In 1935, the new low-wing, all-metal transport planes were introduced. They were fast and they carried passengers in the normal state of comfort and safety to which they had been accustomed in Pullmans.

It was another milestone in engineering progress. That year, patronage of the airlines in the United States almost doubled—860,000 people traveled back and forth, and up and down the country. They saved priceless hours of time and they traveled safely and comfortably.

Today, there are hundreds of transport planes in regular use in addition to 10,000 civil planes, and 24,000 people in the United States now hold pilots' licenses. No one will hazard a guess as to how much these figures will increase.

Three hundred and twenty-five million dollars are already invested in airports located in every major city in the United States.

In 1939 the airplane industry built $225,000,000 worth of planes and equipment—*and had a backlog of $625,000,000 worth of orders still to be filled.*

I could name many other important new industries that are the result of engineering genius, but I believe these are sufficient to illustrate the well grounded hope that greater opportunities lie ahead. And in the creation of all these things we can definitely say that we have contributed as much or more than any other profession to the health and happiness of mankind.

There has been a great deal of loose thinking and even looser talking on the subject known as technological unemployment. But that so-called problem, like the poor, has always been with us if we are to believe some historical remarks. In 1889 the U. S. Commissioner of Labor said: "The rapid development and adaptation of machinery have brought what is commonly called overproduction. The nations of the world have overstocked themselves with machinery and manufacturing plants far in excess of the wants of production. The day of large profits is probably past." Just think; that was only 50 years ago.

Let's look at the record since that time. Among the new industries springing up in the last half century have been the public utility, telphone, automobile, motion picture, aviation, chemical and dozens of others, creating new employment and standards of living that were inconceivable 50 years ago. In view of the miracles that we have seen in our day, is there any one so courageous as to predict that there are no new frontiers for industry and engineering?

It is not difficult to be optimistic about the future of engineering when we take a long range view and have knowledge of facts such as I have recited. More and more is due recognition being given to our achievements and our profession. Only last night I attended a dinner in Cleveland at which 32 engineers and scientists were honored for their contributions to American progress. In several other sections of the country similar events were taking place paying tributes to many more of our profession.

These affairs were sponsored by the National Association of Manufacturers as part of their program to honor those who have made outstanding records in their field of work. "Modern pioneers on the Frontiers of Industry" is the title which is given to those chosen for awards. In this program, industry and science are cooperating in a search for the unsung heroes of the workshop and laboratory.

This brings us up to the present day. Now, what is business expecting of engineering? What are the qualifications of an engineer? Just what does it expect an engineer to do? In speaking of engineers, I am thinking of all classes—civil, mechanical, electrical, chemical, industrial, et cetera.

So diversified are the services required of professional engineers thruout the wide range of industries, public utilities and governmental work, and in the discovery, development and conservation of resources, that men of extremely various personality and physique may achieve success. Qualifications include intellectual and moral honesty, courage, independence of thought, fairness, good sense, sound judgment, perserverance, resourcefulness, ingenuity, orderliness, application, accuracy and endurance. An engineer should have the ability to observe, deduce, apply,

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Philadelphia Professional Engineer Receives Award as "Modern Pioneer"

Joseph S. Pecker, Philadelphia consulting engineer has been nominated by the National Association of Manufacturers for a special award for his work as a modern pioneer.

The award was announced formally at a Modern Pioneer's Dinner, at the Bellevue-Stratford Hotel in February.

Selection of those honored by the National Association of Manufacturers was made by a committee of distinguished scientists headed by Dr. Karl T. Compton, President of the Massachusetts Institute of Technology.

The Committee made a six months' study of men whose pioneering in industry resulted in significant contributions to the American standard of living, and 1940 was the year selected for recognition of the skill and perseverance which built new industries, new jobs, and innumerable conveniences and comforts for the public, because it is the 150th anniversary of the founding of the American patent system protecting inventive genius.

Mr. Pecker, who is forty-six, has been an outstanding leader in the field of mechanical engineering for many years, and among his most note-worthy achievements are those made in connection with the Autogiro.

When Mr. Harold F. Pitcairn first brought the Autogiro to America in 1938, Mr. Pecker was engaged as consulting engineer to develop many mechanical features. In close cooperation with Mr. Pitcairn, Juan de la Cierva, "Father of the Autogiro," and Agnew E. Larsen, Mr. Pecker developed the rotor hub, rotor blade attachments, mechanical starter, the design of the first brake for the rotor system, and the design of the starter and hub for the first Navy 'giro,' the design of the first tandem propeller drive for the road-able autogiro, delivered in 1936 to the Department of Commerce, and other mechanical improvements in current 'giro' use.

With the exception of a very simple hub designed by Mr. Cierva in England, all of this work had no precedent and was pioneered by Mr. Pecker. Units were developed with relatively little experimental work. Designs for the hubs and starters, which are as important to the modern autogiro as the starter is to an automobile, for different weights rotors and engines utilized unique and novel engineering principles, and aeronautics engineers concede that the practical development of the Autogiro was traced to the perfection of these mechanical units.

Mr. Pecker is a graduate of the Drexel Institute and was Chief Draftsman for the Miller Lock Company at a very early age, served in the Ordnance Division during the World War, designing tools and equipment for guns and rifles manufactured at the Frankford Arsenal. In 1918, he organized the Machine & Tool Designing Company, of which he is President, and engaged in private practice as consultant.

As consultant, he has participated in outstanding developments and improvements in the printing arts, the Grammar process for the prevention of offset and he was made an honorary member of the Philadelphia Club of Printing House Craftsmen.

In the Contrifugal field, Mr. Pecker developed the first successful American contrifugal machine to dewater sewage, which is now in use in New York City and other municipalities.

Among other engineering achievements, Mr. Pecker designed the first planer type of milling machine, tools for the mass production of automobile bodies, chassis and transmissions.

Photo by A. Henry Kauffman

JOSEPH S. PECKER

He is a member of the American Society of Mechanical Engineers, the *National Society of Professional Engineers*, the Pennsylvania Society of Professional Engineers and the New York Society of Professional Engineers, Inc. He is now associated with Mr. Simpson as consulting Engineers. They have offices in the Victory Building, 1011 Chestnut Street, Philadelphia.

N. Y. Highway Engineers To Convene

The Fifth ANNUAL CONVENTION of the NEW YORK STATE ASSOCIATION OF HIGHWAY ENGINEERS will be held in Rochester, N. Y. on March 28, 29 and 30, 1940.

Hotel Seneca will be Convention Headquarters with business sessions opening on the afternoon of March 28th, the morning being given over to registration and demonstration. At night will take place the annual banquet of the Association with business sessions continuing all day Friday and an entertainment Saturday night. There will be trips to various points of interest around Rochester.

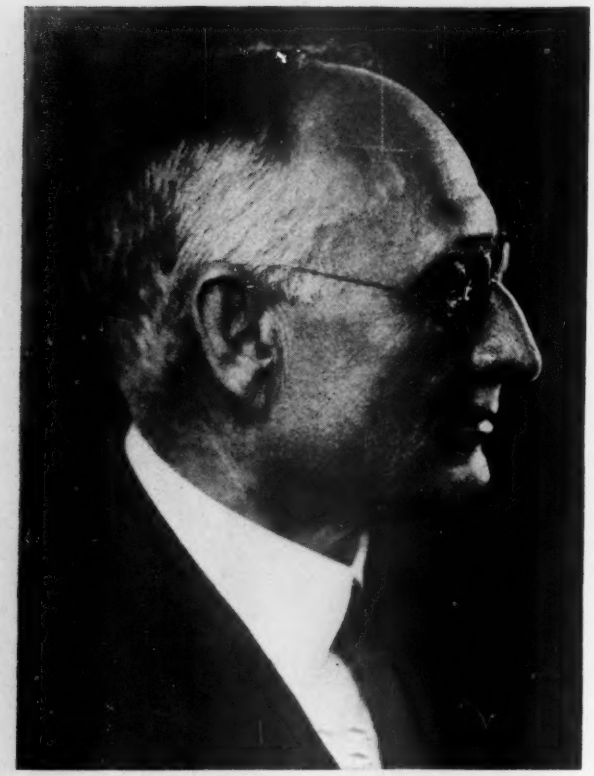
Howard E. Smith, District Engineer, of New York State highway district number four, is honorary chairman of the convention and the following executive committee are now working to make the convention successful.

G. W. Ryan P. L. Ryan J. P. Larsen
F. C. Facer P. H. Wright

The Engineer in an Organic Society

By DR. ARTHUR E. MORGAN, Consulting Engineer, Yellow Springs, Ohio

An Address Before the Convention of the Ohio and National Societies of Professional Engineers at Columbus, Ohio, February 10, 1940



Dr. Arthur E. Morgan

The changes which have taken place in the economic organization of society during the past hundred years are greater than those of the two thousand years preceding. The engineer is largely responsible for this metamorphosis. As we gradually are coming to realize, increasing complexity in the mechanics of life results in changes through the whole fabric of society, in laws, customs, manners, and ethics. We do not become adjusted to the new world simply by giving up the horse for the automobile. We must revise the entire fabric of human relations. Our society is becoming less and less an aggregation of autonomous individuals, and more and more a living, integrated organism, in which every unit depends on every other, and in which production results from organized effort more than from individual undertaking.

I wish to draw your attention to the effect of some of these changes upon the position and functions of the engineer, and to make a few suggestions as to how he may deal with the issue. These changing conditions are evident both in public and in private activities. Let us first consider the place of the engineer in public government as it is coming to represent the new order of things.

During the past half century there has been uninterrupted and constantly accelerated increase in the extent and variety of the functions of governments. This has been true of all civilized countries, and in general of all administrations, regardless of the party in power, though some administrations have moved faster than others in that respect. In most countries this expansion of the functions of government is proceeding faster than ever before.

In our moments of wishful thinking we may dream of going back to the good old days of simple and inexpensive government. However, when we wake up and look at things as they are, and as most probably they are going to be, we are forced to admit that simple and inexpensive government is a thing of the past. I am not speaking of wishes and theories and beliefs, but of realities. Regardless of any change of administration or of policy, we shall have the reality of a huge public debt, and the habit, so easy to form and so hard to break, of leaning on the government. We may slow down that process of expansion, in the hope that it may not get completely out of hand, but the probability of greatly turning back the clock to genuinely simplified and inexpensive government is very remote. It is important that we keep this condition in mind, for otherwise our course may be as impractical as that of an automotive engineer who designed cars on the assumption of perpetual summer.

The value of any public program is profoundly affected by the quality of its administration. Given good administration, many extensions of public function represent definite advances in the art of living.

During recent years I have been associated with an undertaking which, I think, has possibilities of that character. I refer to the program for the unified control of a great river system for all useful purposes. Such a project, on such a scale, never has been initiated by private enterprise, and in the nature of things is not likely to be so initiated. The dimensions are too great, even for present-day industry.

Yet, complex as this system is, its construction and operation in such manner as to achieve approximately the maximum total benefit is technically feasible. The achievement of such a purpose represents an advance in the art of government and of engineering. Ability to carry through in an economical and competent technical manner a complicated process which has great practical benefits is a characteristic of a civilized people.

In such a case, however, there must be soundness and excellence of administration. The democratic process is put to a severe test. The public as a whole cannot follow the intricacies of the project. To a very large degree the public is compelled to hand over the administration of such a project to one or to a few men, and to trust them with it. If there is a desire on the part of these administrators to exploit the project for personal or political ends, the public is at a great advantage, and may scarcely be able to protect itself against a substantial miscarriage of good government. This is a typical problem of government in modern complex society.

During recent years we have observed such abuse of the power of public office. We have seen misleading reports to Congress and the public. We have seen claims of profitable operation not borne out by the facts. We have seen incomplete and unsound accounting. We have seen a tendency toward intrigue and strategy on the part of a few who get control of a great organization, while most of the staff was giving its attention to doing the job. In short, we have seen great public projects with great possibilities of usefulness, by the manner of their administration being made less useful than they might have been.

National Director of N.S.P.E. Elected President of American Road Builders Association

The average man in the ranks in such an organization has little to say as to policy. When he sees miscarriages of good public administration, the conclusion he is apt to reach is that such is the kind of world he lives in, and that since he must make a living for himself and his family he had better accept things as they are, and obey orders. The high hopes with which he began the job he comes to regard as an illusion. That loss of self-respect and of courage of independent judgment is perhaps as great as the loss of physical efficiency.

I have spoken of a single type of public organization, one with which engineers had much to do, even though what they created was largely taken out of their hands. However, the same dilemma of the administration of expanding government meets us on every hand. Consider the great and ever-increasing spread of public agencies. They are concerned with public works, with control and supervision of trade, transportation, communications, banking and finance, unemployment, old age security, labor conditions, food inspection, the management of agriculture, and many other issues. In most of them one or a few officials exercise great power, though sometimes they may be little more than agencies of a still more powerful public administrator.

Here and there the spotlight of public attention for a time may be focused on the administration of one of these agencies, and there may be some degree of public control and discipline. Yet in a complex situation a clever administrator on the inside can make the situation appear so favorable or so complex that public correction may largely be avoided or nullified. In a short time public attention will pass to other matters, and their administration is again largely without supervision.

These are some of the disabilities of present-day large-scale democratic governments. Autocratic governments have similar and even greater troubles, though they may not be so exposed to public view.

As has been said numberless times, the engineer has largely been the cause of this complexity. If we did not have steam and electric and internal combustion power, or automobiles or the telephone, the radio, the railroad, or other technical developments, we should not be having some of the complexities of present-day life and of government.

Yet, in the administration of these agencies the engineer seldom is in a position of authority. As a rule he is the technical agency of other men's purposes. If administrative power changes hands, and if policy changes character, what can the engineer do? Quite commonly he assumes that a man must live and eat, that it is not in his power to make policy, and that the safest and wisest course is to keep quiet and obey orders. Can the engineer act otherwise?

Democracy is not a mystic formula. It is actual participation in the determination and execution of policies. The engineer often is in a position to know best the merit of a situation. Our modern world is largely an engineer's world, and there are many cases where his judgment should be controlling. Are there any ways by which this possibility can become a reality?

It is such practical problems at this that, in the aggregate, make up the problem of democracy. They are prob-

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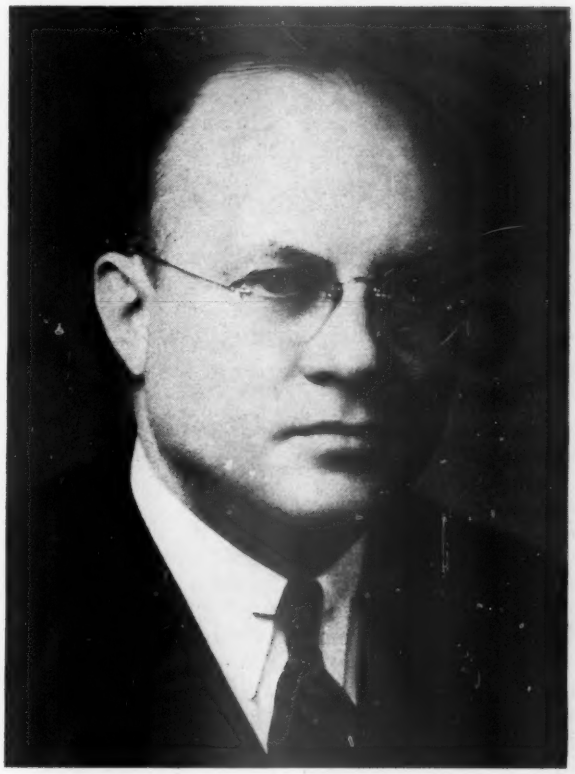

Hal G. Sours

Hal G. Sours, assistant director and chief engineer of the Ohio department of highways, was recently elected president of the American Road Builders Association, the highest honor ever paid an Ohioan in the highway industry.

The election of Mr. Sours was without opposition, one of the very few times in the history of the American Road Builders Association that such an honor was accorded a nominee.

In 1930, Mr. Sours was president of the Ohio Engineering Society, which was later converted into the Ohio Society of Professional Engineers. In 1935, together with several other engineers in Akron, he set up the Akron Society of Professional Engineers, a chapter of the Ohio Society, and was president during the first year. At present, Mr. Sours is National Director of the Ohio Society of Professional Engineers, and in that capacity represents the Ohio Society on the Board of Directors of N.S.P.E.

The election of Mr. Sours in A.R.B.A. also brings national recognition to Ohio and its department of highways. It likewise is one of the very few instances where a state highway official has been named president of the American Road Builders Association.

Mr. Sours gots his start in the A.R.B.A. through the county officials' section, when, several years ago, he was county engineer at Akron, in Summit County. He attended the road builders' conventions, took an interest in the work of the organization, worked hard on committees,—and finally was rewarded by being elected president of the county officials' group. From that point Mr. Sours has been active in A.R.B.A. affairs as they pertain to the highway industry generally.

Membership of the American Road Builders Association is made up of federal, state, county and municipal engineers, manufacturers and producers of highway materials and equipment, and highway contractors.

Mr. Sours was born on a farm at Manchester, Summit County, Ohio, and attended high school in Barberton, Ohio. He is married and has two children, a son and a daughter. He was educated in the Barberton schools and the University of Akron. For six years after 1919 he served the state highway department as maintenance engineer and resident engineer in Summit County. He was elected county engineer in 1924 at Akron, and reelected in 1928 and 1932.

Said Col. Robert S. Beightler, director of the Ohio department of highways, "the election of Mr. Sours as president of the American Road Builders Association is a source of gratification to me, because it proves that in a very short space of time Ohio has been recognized as the center of sound highway administration."

The Engineer in an Organic Society

(Continued from page 11)

lems not alone of the engineer, because accountants, economists, statisticians, medical men, and general administrators find themselves in similar situations. It is not so much by swearing loyalty to democracy in the abstract as by successfully meeting such issues as these that democracy can be made to work. Because of the prominent part which the engineer must play in our present-day world, the manner in which he handles himself is very important.

So far I have discussed public business. However, the distinction between public and private economic life is growing steadily less. While the public business is expanding to include economically productive undertakings, private business is coming to have the proportions and characteristics of governments. Very few governments of a century ago had as large budgets or as many employees, or were so intimately in contact with the lives of the people, as is the American Telephone and Telegraph System today. Almost the same may be said of the General Motors Corporation. They are, in fact, part of the public economy. Their "owners" and customers have no more direct control of their operation than the employees and citizens of a nation have direct control of governments. They are, in fact, private governments—privately managed phases of our common life. In them, too, individual self-direction has given way to the integrated operation of an economic organism.

The place and the problems of the engineer in the employ of large-scale industry are not substantially different than in the public service. It is not only in *public* work that the engineer is under pressure to reflect the views of his employer. I believe it may be a valid criticism of engineers as of professional men in general that from a spirit of loyalty they tend sometimes uncritically to adopt the views of their employers, rather than to develop their own social philosophies in a responsible, independent and objective manner.

I recall an occasion about 20 years ago when there was a move on the part of labor in the steel industry to break away from the custom of a twelve-hour working day for seven days in the week. From time to time on change of shifts that meant a twenty-four-hour working day for one day. A man working under such conditions could have little home life. He was not much more than a beast of burden. Looking back on that regime it seems scarcely human. At that time I was in contact with a considerable number of engineers, mostly in private industry, and I found most of them reflecting the attitude of management in the steel industry, and opposing the change to shorter hours. They had not been able to get an objective, human view of the problem.

I have no specific cure for the present shortcomings of government or of private business. (They are now intimately associated, and cannot ever be separated again.) I dare prophesy that no quick remedy will be found. The modern world is like a boy who has inherited a vast and intricate business, but who has not yet acquired the judgment and experience to administer it, and who is somewhat of a wastrel. He is bound to make some serious mistakes in the process of growing up. There even is danger that he may go bankrupt. However, by adoption of certain fundamental policies, he may reduce the risk and the range of mistakes.

Concerning the relation of the engineer to the public life of which he is a part, regardless of whether he works for the government or for private industry, I have no formula for avoiding all mistakes. However, I believe that some suggestions may be helpful in narrowing the range of error and increasing the engineer's degree of effectiveness. As a result of 35 years of engineering experience, largely in the public service, I have three suggestions to offer which I think bear upon the issue of effective government, and also of effective private industry, for large-scale industry today in effect is a sort of private economic government.

The first of these suggestions is that the engineer get the habit of seeing himself, not just as a technical specialist, but also as a citizen and as a policy-determining member of the community. Whether an engineer works for the public or for private industry, he should do more than echo the views of his employer. He should not be a "yes" man or a shadow of those on whom he relies for a living. One conception of the engineer is similar to that of the Swiss mercenary soldier of the last century. The Swiss mercenary, when he hired out to a prince to fight for him, asked no questions, fought hard and skillfully, and was dependable. But he was not a citizen, one of the policy makers of the government. He got his wages for fighting for his master, not for having opinions.

How to distinguish between loyalty and subservience often is a very difficult and sometimes a baffling problem, but that distinction is essential to democratic society. A man must have a scale of loyalties, his greater loyalty being to those principles and policies that are the foundation of civilized society.

Before the engineer can be a substantial force in a democracy he must have a mind of his own. He must have worked for and achieved a social philosophy which is not just a reflection of that of his last employer. Until that independence of outlook is achieved, he is not yet in fact a part of democratic government. He cannot expect to be a large factor in policy-making decisions, except purely as a technician. He may pass judgment on the technical feasibility of a project, but whether or not it is in the public interest will be considered none of his business.

Given development of self-respecting judgment and social philosophy, there is another step engineers can take to make themselves a part of the democratic process. The individual engineer, whether his employer is the government or a private company, is in a very vulnerable position. His professional standards require integrity or judgment, and such integrity by and large has been characteristic of his profession. But the days of the independent practicing engineer are largely past. He now works for an employer, and he takes orders.

What protection has he when those orders contravene his professional standards or his sense of public duty? He can resign. But more and more he is approaching the condition where he has only one possible employer. In my own field of flood control the federal government has become almost the only employer. If I am not on good terms with the administration, my chance for employment in the field of my life work is practically nil. Under such circumstances the admonition, "Don't get out on a limb where you will not be of value to the administration," may be very potent. In the telephone, radio, and automotive fields the condition sometimes is not greatly different. The individual engineer tends to be, not a free agent, but a technical implement of other men's purposes. Under these conditions, how can the engineer maintain his position as a citizen of a democracy, as a man of self-respecting and independent judgment?

I believe he must maintain that position in part by professional association. Similarly, in other callings, such as accounting and administration, the united action of professional groups to sustain professional standards in the public interest may give vitality to the democratic process. The engineering profession as a whole, or at least its principle segments, must set up overall professional standards, and then back up these standards with the whole force of the profession, so that the engineer who is called upon to sacrifice his carefully developed professional standards may have a powerful supporting force at his back. If and when that is done, democracy, both political and economic, can become a reality to the engineer. Until that is done, democracy, so far as his personal career is concerned, is only a dream. The engineer who has but a very few possible employers in his field professionally may not be much better off economically than in a totalitarian government.

But for engineering associations to be a democratic force in the public interest, such organizations must be more than the summing up of the selfish interests of the members, and more than the reflections of the views of their several employers. There must be matured social philosophy and purpose. Otherwise an engineering organization may be only a more powerful means of regimenting the members along the lines of the policy which their employers happen to be following, whether such employers are public governments or private industries.

Our modern technical development has much outgrown the instrumentalities for giving expression to democratic government. The lone individual is largely helpless. The usual political machine is organized on a rather low plane. Private industrial organization can be ruthless in pursuit of survival and of successful operation. In some way the voice of considered and competent judgment from many points of view must be heard in policy-making councils. The orderly formation of professional standards and policies, and effective union in applying those where the public interest is involved, may be one very important way to make democracy work.

Pressure groups, as they are called, are bound to exist, because groups of men with like interests are not going to give up the advantages of collective action. In organizations of professional men we have the chance that professional standards and policies may transcend personal interest, and may be in the public interest. But that transcending of personal interest must be real, and the engineers' organization must see the general public interest as superior to the immediate interest of the individual engineer or of his employer, or of the economic or government group his employer represents. Otherwise more effective group action by engineers will but create another pressure group. One need only consider the expressions of numerous competent and public-spirited medical men to gain an impression that the American Medical Association to some degree sometimes has been allowed to become a pressure group in the rather short-sighted self-interest of its members, rather than in the public interest. Professional solidarity among engineers needs to avoid that miscarriage of possibilities for public service.

We need professional organization, professional standards, and professional support for those standards. Yet, professional organization and personal character are not alternatives; they are complementary. There has been a strong tendency to look upon the increasing social integration and socialization of function as doing away with personal responsibility; sometimes because individuals seem helpless in a great organization, but sometimes, also, because morally lazy men seek escape from the hard work of personal discipline. A friend told me recently of how shocked he was at finding workers in the field of public health in a large city, well paid men who were considered authorities in their field, habituated to careless and undisciplined personal habits. Such a situation would be an extreme example of the dichotomy which tends to inflict those who loosely assume that social activity releases one from the necessity for personal character. The engineer must guard against a somewhat similar weakness. With a great organization directing the policy under which he works, he may assume that personal professional conviction on his part is unnecessary or ineffective. The opposite is true. The integration of economic life has greatly increased the problem of the engineer in relating his private convictions to his professional work. He can no longer drift along on his inherited ethical inclinations. He must think his way through, and support his thinking with deliberate but vigorous action, perhaps at great cost to his personal interest. Great corporations have no ethical incentive except that supplied by those who make up the personnel.

No matter how well his plans are worked out, there may be occasions when in the public interest the engineer must stand up and refuse to meet demands made on him. Yet he and his family must continue to eat and to have shelter. The engineer who cares enough for his self-respect and for reasonable independence of judgment to pay the price for it, will make forehanded preparation for such contingencies. He will live on less than he earns. He will be somewhat independent of current standards of personal expenditure. He will not try to keep up with the Joneses. He will develop economic reserves. Then, when the time comes which requires that he make a sacrifice for his convictions, he can do it without personal disaster.

Democracy is not a nebulous thing which we get in the abstract. It is actual participation in the everyday affairs of life and society. We become democratic, not by talking about it, but by equipping ourselves for such participation. The way of democracy, or of any government, at best will be very difficult during the coming years. The engineer has an important part to play. But it is not an easy part. I do not know all the answers, but I think that the suggestions I have made point to a part of the answer as to what is the place of the engineer in an expanding government, and an expanding society. If the engineer by taking these steps should point the way, it might turn out that he had supplied an important key which could be used by other classes or professions in approaching a measure of solution to the problems of complex modern society.

Some Unsolved Engineer's Problems

By DEAN E. A. HOLBROOK

Schools of Engineering and Mines, University of Pittsburgh, Pittsburgh, Pennsylvania; and National Director of the Pennsylvania Society of Professional Engineers

Address Delivered at Annual Convention of the National Society of Professional Engineers in Columbus, Ohio, in February

At a recent interstate river pollution conference in Pittsburgh, I noted a lawyer politician was chairman, a lawyer state senator was vice-chairman, and a number of other lawyers were present. In the invited group were several prominent civil, sanitary, and mining engineers. In his opening remarks, the chairman said—"We will consider here only the broad *important* questions of policy, leaving to the engineers the *secondary* questions of design and construction."

Why do we, as engineers, have inarticulate voices? We love to talk and to work on technical things for which there is a fixed answer. How we dislike the ever present problems of public and engineering policy, for which there often is no fixed stable answer, which change in emphasis from year to year, and yet which ever will trouble us.

You are aware by this time that I am not going to talk on sewerage in Lake Erie, or on skidless auto tires, or other unsolved technical engineering problems, but rather on certain human professional problems that face us all in our lifetime as engineers.

Mr. Average Professional Engineer can divide his active life into four general periods (1) the engineering student; (2) the young graduate apprentice; (3) the middle-aged mature engineer, and (4) the older professional man. There are unsolved professional problems peculiar to these groups that concern and should trouble every one of us. Each of us has to meet these four problems and muddle through them somehow.

Problem No. 1—The Student Engineer. Who is to be allowed to study engineering? Doctor Steinman, our distinguished past president of the National Society, has time and again told us through our magazine, that we are admitting and graduating too many engineering students in our American colleges and, indeed, have too many engineering schools; and we, as a Society, have passed resolutions designed to show that the way to help professional engineering is to shut down on the number of students admitted to our engineering schools. In spite of this agitation, the number of engineering students (and indeed the number of engineering schools) continue to increase rapidly. Fifty years ago 5% of the men entering American colleges chose engineering; today the figure is 28%. Personally, I never have met a high school vocational teacher who had the least vision of professional engineering, and they continue to urge boys into or away from engineering in an unpredictable manner. You can't stop engineering students here.

Dr. Steinman rightly points out that professional doctors and lawyers are limited at the source. May I also add that so are members of the plumber's union. It is so easy for us as professional engineers to say, "yes, there are too many engineers and the way to stop it is to stop educating young men in engineering." But this easy manner does not solve our problem. The difficult point for us in following the lead of the medical school is that about 95% of the men graduating from medical school become professional practicing physicians, while less than 30% of the men graduating from engineering schools become practicing engineers. Dr. Steinman himself admits that 25% only of our engineering graduates attain professional status, 20% are in subprofessional work, while 55% do not follow their college course profession. Please remember that when the young doctor has finished medical school and a year of interneship, he is ready to take his State examination. With us, following college, we must have 6, 8, or even 10 years before we have the professional maturity and experience to qualify through a State examination. The truth is that professional experience and maturity are with us the vital thing, and our four years in college is a foundation only. I even go so far as to say that our average four-year engineering school course is not professional but only pre-professional in character, and I hope and expect that only 25% of our graduates will continue to become professional engineers. Some of our present day engineering curricula offer a better rounded college course for the 1940 civilization than the so-called liberal arts college course or even a course in business administration. So many of our boys are not of the technical type, but they want an engineering understanding and an engineering approach for their life work which perhaps will be sales, or executive, or commercial in character. There is a way to limit and control professional engineering, but it is not at its source in the engineering schools. You can't dam water as it falls out of the clouds on to the sides of a mountain. Some of it will evaporate, some will sink into the ground, and some will water the vegetation. Only 30 or 40 per cent of it reaches the streams, and here, as you all know, is where we try to dam it, keep it from pollution, and make it useful to society. And the place to limit and control professional engineering is with the 30 or 40% of graduates who definitely are in the professional stream. So, as between those who would keep the engineering school general and subprofessional and open, and those who would make it professional and sharply limited to a small select group of boys of higher and higher academic standards, we have what I call the first unsolved and ever present problem in the engineering profession.

I come now to Problem No. 2, which concerns the development of the young graduate or apprentice engineer. These are the difficult years, or as some one has called them, "The years of the great awakening." Half of these boys discover that they dislike the detailed technical work of engineering, some find themselves in blind alley jobs with a company that hires them because they are cheap and perhaps expects that 90% will quit, so as to allow a new crop next year. Some find themselves in a great drafting room without hope of creative self-expression for years, some want sales or other semi-technical work. I am sure that only 30% will so enjoy professional engineering that they will want to follow it permanently. Some of my best graduates have become doctors, lawyers, clergymen, business executives, and other successful non-

technical men. I have never met one of them who was not glad he had an engineering foundation or who would have followed a different course in college.

But, especially in the large industrial cities, we have great groups of young engineering graduates who think they want to be professional engineers. Last winter, I was asked to speak to about 80 young engineering graduates out of college from one to five years, who composed the junior group of a large Engineering society. I prepared a talk on the usual line of professional standards and endeavor, perhaps containing the usual number of platitudes. When I talked with their committee and outlined what I was to say, one of the men said—"To h--- with that stuff." What we want to know is "Shall we affiliate with the C. I. O.?" He was one of 30 engineering graduates in a drafting and design room, and the company was paying some of them less than union men doing almost unskilled labor in the same factory.

Our Dr. Steinman has said—"The young engineer has to decide for himself whether to align himself with a union or with his employer. The profession's answer to unionism is that engineering is a profession." This is a great ideal, but in 1940 it leads in some cases to taking unfair economic advantage of this lone individual (the apprentice engineer). Personally, at different periods in my life, I have been a member of a union and a professional engineer without losing self-respect in either case.

Sometimes I wish I were dean of a country, instead of a city college. Young engineers from many colleges have a fondness for thinking you can get them a job and in coming in and telling you their troubles. No matter what his school, this boy is a better man technically than he is socially, or as an organization man. If I tell him to affiliate with his national professional society, he sometimes says—"What will it do for me, it has done nothing for Bill Smith who belongs." If I tell him to publish papers and get a reputation, he says—"The company I have been with will not allow its employees to publish technical papers." Then perhaps I tell him to work hard and look forward in 30 years to becoming either president of some company or a successful consulting engineer. This, as you must agree, is useless advice, for of those who stick to technical work, the great majority are fitted by choice, or by nature, or inclination, or chance, to become successful designers, or surveyors, or inspectors, or constructors, or other specialists—men fitted into the organization and in responsible charge of some part of it.

Then perhaps I talk to him on his future as conditioned and helped by his becoming a licensed professional engineer. He asks me—"What good will it do me, in an industrial organization, and working as a mechanical or chemical engineer, to work to get a state license as a professional engineer?" I begin to think that there is plenty of work ahead of us as a professional society, to broaden the scope of professional engineering so that these men will be as vitally interested as is the civil engineer today.

It is all very well for those of us approaching 60 to say, "If this young fellow is any good, he will come to the top like we did." No, gentlemen, this is a new day and a new generation; the young engineer as an individual often is being exploited and he has no self-defense. Irrespective of his college, he is a pretty strong individual technically and a pretty weak one economically between the labor unions on one side and the production each year of a new crop of graduates on the other side. He needs advice and more education, but not alone on the strength of rivets or the capacity of an electrical circuit. I leave then, this unsolved and controversial problem that most engineers seem afraid to talk on—The proper *non-technical development* of the young engineer.

My Problem No. 3 is—The Middle-aged or Mature Engineer. The most pronounced characteristic of the middle-aged engineer is that he is an individualist and a conservative. Most often he is a technical specialist. A clergyman said to me the other day, that "So and so was of the technical type—the type, who like President Hoover, could not get a grip on men." A public forum manager recently told me—"I can get 100 liberals and radicals to speak on any subject. I cannot get one real conservative who is a good speaker and who can entertain and hold the crowd."

A recent survey by Massachusetts Institute of Technology finds that after ten years there is a strong drift away from professional engineering by graduates interested in executive, business, and management work. Technical engineering has little attraction for great executive ability. Does this not leave to develop as professional engineers, those whose interest is chiefly technical and who are creative, imaginative, and individualistic? A director of the U. S. Bureau of Mines once told me, "If I want five different opinions on a matter of policy, I can call five of my engineers together." Let us admit our weakness. We are accustomed to dealing with facts and, therefore, want to solve our problem on the factual basis, whereas problems involving persons and ideals are solved on feelings, emotions, and other non-factual attributes.

How Pennsylvania engineers ever got together long enough to pass a professional licensing bill was long a mystery to me. I am told that they never did get together, but that we have to thank for it a rather small group, mostly civil engineers. I am a mining engineer and believe it or not, some of the Board of Directors of a national engineering society told me recently that they still opposed registration of engineers. Talk about an ostrich burying his head in the sand! They either do not know, or do not care, that the procession has passed by, and that the Civil War is over.

Why is it that we are this narrow, self-centered type of man? Some of our technical educators claim that a change in No. 1 will help this deficiency in No. 3. They want more liberalizing electives put into our college engineering courses. Somehow I think this is a nice subject to talk about, and some general subjects in college are worth while for engineers. However, I doubt that the addition of three or six credits of economics or psychology is going to change materially the type of man you are. Personally, I am interested today, as an avocation, in the study of religion and certain phases of history, and I never studied them in college.

Or—is the engineer the way he is because that is the kind of man he is, and the way he wants to be? Is it not that he just does not care to be bothered with perpetual controversies about politics and economics? Give him a living and the right to be left alone to work with things and he is happy. It is hard to arouse him to external things. And, lest you think this narrowness is confined to routine engineers wearing out their pants in office or factory, let me say that I have observed great research engineers who don't give a rap about much of anything except their own specialty. Their off-duty activities are so often meaningless to society irrespective of whether the engineer comes from the bottom or the top.

A man who has had a chance for many years to contact hundreds of technical men in a great organization

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Origin and Use of the Word "Engineer"

By D. B. STEINMAN

Past President of N. S. P. E.

The word *"engineer"* (French: "ingénieur," German: "ingenieur," Spanish: "ingeniero," Italian: "ingeniero," Portuguese: "engenheiro") is derived from the Latin word *"ingenium"* meaning ingenuity, creative spirit, invention.

The historical evolution of the word "engineer," in form and in application, is outlined (with dates of recorded use) in the following tabulation:

Latin:

ingenium = ingenuity, creative spirit, invention.

Medieval Latin:

(1067) ingenium = contrivance, device, invention.
(1125) ingeniare = to contrive, to invent.
(1130) ingeniator = engineer, one who contrives or invents.
(1140) ingenium = a contrivance, a military machine.

Old English:

(1131) engynour = inventor and builder of military machines.

Medieval French:

(1195) incignerius = engineer.
(1196) encignerium communis = engineer of the city.
(1216) ingegnerius = engineer.
(1497) ingeniarius = engineer (applied to a man who was an architect, land surveyor, and hydraulic expert).

Germany:

(1571) Ingegnier = engineer.
(1578) Ingenieur = engineer.
(1620) Ingenier und Baumeister = engineer and architect.
(1630) Ingenieurs Schul = School for Engineers—(title of a textbook).
(1650) supremus ingeniarius (Latin) = chief engineer.
(1686) Oberingenieur = chief engineer.

France:

(1689) Ingenieurs-constructeurs de la marine = official (royal) naval architects.
(1695) Corps des Ingénieurs géographes = organization of geodetic engineers.
(1739) Ingénieurs d'architecture civil = civil engineers.
(1755) Ingénieur = "a man trained in mechanical science who, by the machines which he invents, increases moving forces, either for conveying or raising loads or for conveying or raising water."

Italy:

(1748) l'ingeniero civil = civil engineering (survey- and hydraulics).

England:

(1771) "Civil Engineers of the Kingdom" = an organization of civil engineers.
(1793) "Society of Civil Engineers"—(reorganized under this name).

From the foregoing outline tracing the evolution and meaning of the word "engineer," some interesting and significant observations may be recorded.

As far back as 1130 A. D., the word *"engineer,"* in its early forms ("ingeniator," "engynour," "incignerius," "encignerium," "ingegnerius"), meant one who applied ingenuity, creative spirit, or invention to the planning, designing or contrivance of machines and other ingenious devices. The word *"engineer"* was used in this sense for at least six centuries before the steam engine was invented. The use of the word *"engineer"* in the sense of an operator of engines, locomotives, or boilers was a later and secondary development.

Although the early use of the word *"engineer"* in its various forms was primarily in the military sense, and the word "engynour" (1131 A. D.) meant an inventor and builder of military machines and fortifications, the emphasis was always on creative design and invention, not on mere operation. Soon, moreover, we find the meaning of the word broadened to include civil works (civil engineering as distinguished from military engineering), and as far back as 1497 we find the word *"ingeniarius"* used to describe a man who was an architect, land surveyor, and hydraulic expert.

The invention of the steam engine by Watt came in 1765, the invention of the steamboat by Fitch in 1787, and the invention of the steam locomotive by Stephenson in 1815. The use of such designations as "locomotive engineer", "stationary engineer," etc., applied to the operators of steam engines and equipment, is therefore, a comparatively recent development and is a diversion of the word "engineer" from its original meaning.

The word "engine", derived from the same root "ingenium" as the word "engineer", means an ingenious contrivance. Originally it was used in the sense of military machines or contrivances. Following the invention of the steam engine, the word "engine" came to have its present more limited meaning.

For more than eight centuries, the word *"engineer"*, including its early forms, has meant the designer, inventor, and creator of engines and other ingenious contrivances. For but little more than one century, the word *"engineer"* has been misapplied, as a secondary use, to operators of engines, locomotive drivers, and boiler tenders. The weight of historical and etymological precedent is on the side of the application of the word *"engineer"* in the professional sense, not in the operating sense.

Nowadays men who operate engines on ships call themselves "marine engineers." A "marine engineer" meant a naval architect, a designer and builder of ships (France, 1689), a century before the steamboat was invented.

Nowadays a man who operates some engines and boilers, with one or more assistants, calls himself a "chief engineer." The title "chief engineer" was used in the professional sense (Germany, 1650), more than a century before the steam engine was invented.

The man who drives an automobile and takes care of its maintenance is called a "chauffeur," not an "engineer." The man who repairs an automobile is called a "mechanic," not an "engineer." The man who *designs* the automobile and calculates its performance is an "engineer," generally classified as an "automotive engineer."

The man who operates a steam engine is an "engineman" or "engine operator," not an "engineer." The man who *designs* the engine is an "engineer," generally classified as a "mechanical engineer."

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Soil Erosion and Flood Control

By W. C. LOWDERMILK

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Lecture Given Before Connecticut Society of Professional Engineers, at Bridgeport, Connecticut, this Winter

In the march to its destiny to create in this new land a high standard of living and liberty and a more general distribution of well-being, the United States has reached a transition stage between exploitive occupation and sustained conservation of its land resources. In a short period of three centuries, grazing, lumbering, and farming developed at an ever-increasing pace until the whirlwind and dust-raising finale during and just after the World War. In true American fashion, we had finished up the occupation of a new continent with a bang and a blow—in the dust bowl.

We have entered upon a new era in the relationship of the American people to their lands and waters. How successful we will be depends upon completing the change of attitude of our people toward the land and water resources of the country which was begun in 1933 by establishment of soil erosion control work.

After six years of a nation-wide undertaking in land conservation and erosion control, we have learned much and have much yet to learn. We have only begun to solve this vital problem of saving our soils. If we do not do still better, we shall only carry on a losing fight.

The task is tremendous, but our ingenuity, resourcefulness, spirit, and abilities are equal to the task now, while we still have great areas of good land. We can be provident only while in the possession of a certain amount of abundance. For a starving farmer will eat his seed grain, although he knows it to be improvident. He has no other choice. The salvation of our American way of life depends upon our taking thought and action before we are driven to devour our seed grain merely to keep alive. We have much to learn from the experience of the old world.

It is fitting that the Department of Agriculture should at the beginning of such an important era in our history, survey the experience of older countries in the use of land as it relates to soil erosion, soil and water conservation and torrential flood control. The Near East holds special interest, for it is where our civilization first began, 7 thousand years ago; we live on its last western frontiers. It was my good fortune to be selected to make a beginning in such a survey.

An undertaking of this nature depends upon cooperation of many people and agencies. I deeply appreciate the most generous and helpful cooperation of the officials of the Department of Agriculture and the State Department and of the officials of the several countries where studies were made. We sought to make lasting contacts with authorities in agriculture and related fields so as to reap the benefits of our survey in years to come.

Unfortunately, our survey was interrupted by the outbreak of war, but not until we had completed 2/3 of our trip as planned and had traveled in 17 countries and dependencies and made studies of 124 areas of special interest in 14 countries. We traveled overland 25,300 miles in my car, and an additional 1500 miles by cars and 600 miles in airplanes furnished by other Governments at no expense to the United States. I slept in 148 different beds, and when I say different, I mean different! One or more conferences were held with more than 120 scientists and Government officials with whom correspondence was carried on while we were enroute.

Our survey extended from the humid climate of England to the deserts of Sahara and Arabia. The route of travel is outlined in red on the map. Throughout this wide range of climate we encountered a great variety of experience in use of land, both ancient and modern. This expanse of land falls into two broad regions separated by the Mediterranean Sea. North of the Mediterranean, agriculture has developed under the spell of the forest and retreating ice sheets. Cultivated fields have been won from forests. South of the Mediterranean, agriculture has developed under the spell of grasslands and the merciless desert beyond. Fields have been won from the grasslands, woodlands and from the forests in the higher elevations of isolated mountain ranges. We shall begin with a look at some uses of land north of the Mediterranean and then follow the fate of land-use south and east of the Mediterranean Sea.

Our study of such a formidable subject within fifteen months' is simplified by analyzing the problems of land-use through the centuries, into major controls: These major controls are divided into two broad groups, namely, (1) economic and (2) natural. Economic controls are less discernible in a wasted landscape; they are more changeable than climate. Whereas the effects of natural controls are cumulative, and are inscribed in the face of the land—the longer they run the deeper are they written and the easier to read.

Economic controls are reflected in population pressures. Such pressures are brought about by great streams of humanity spreading throughout the earth encountering dams of all sorts—dams of race, dams of language, and religion, dams of national borders, tariffs and restrictions on immigration. Population pressure may rise high enough to burst the highest dams.

We may further divide natural controls on the basis of topography, into flat lands and sloping lands. Generally, the hazard of erosion is negligible on flat lands. They have their problems, it is true, such as the accumulation of salts and rising water tables, for which drainage is usually a solution, such as inundations, and active sand dunes, for which engineering and forestry measures are required. But the hazards of soil erosion are critical on sloping lands. The tiller of soil has met his greatest problem throughout the ages in maintaining a permanent agriculture on sloping lands. We found failures and successes strewn throughout the course of the survey. We gave most attention to the fate of sloping lands under use.

England, favored with a mild climate and heavy soils, has developed a permanent agriculture, and claims the oldest agricultural experiment station. We are listening here to Sir John Russell, Director of the Rothamsted Experiment Station discuss ways of increasing the yields of lands, cultivated for a thousand and more years in the past and safe for use as long or longer in the future. Gently rolling lands have yielded heavy crops of wheat up to 60 bushels per acre in balanced rotations; when too much rain does not fall. The maximum yield thus far is 96 bushels per acre. The problems now confronting soil management are kinds of implements, fertilizers, rotations and seed selection.

The population in Holland is high, being 680 per square mile of total area, and 2560 of cultivated area. By way of comparison, the population in the United States is 41 per square mile of total area and about 208 of cultivated area. This high population pressure in Holland has driven this ingenious and industrious people to dyke off and de-water the ocean to reclaim the floor of the sea for more farms. The Zuider Zee project in progress will add 550,000 productive acres to Holland's land. We are standing on what was the floor of the sea only six years ago, 16 feet below sea level in the new Wieringmeer polder of the Zuider Zee project. This first polder contains 48,000 acres, de-watered and leached of its salt, cultivated to agricultural crops and equipped with modern farm houses.

This land is a part of the combined delta of the Rhine and Meuse Rivers, and has been sinking at the rate of one meter per thousand years. In the past 4,000 years, the land has sunk 4 meters, or about 13 feet. Evidence of this was found in the roots of marshy plants still existing in the soil as shown in the slide.

The Dutch people have acquired new land by most efficient engineering at a cost of about $200 per acre and have laid out new farms and villages on it. This sort of conquest is more commendable and less expensive than the annexation of lands of neighboring countries by war.

In Southwestern France, more than 1,500 years ago, vandals destroyed works of dune fixation and forests. This removal of natural vegetation from sandy lands set dunes in motion; they had covered by Napoleon's time about 400,000 acres. Invading dunes choked stream channels and converted a broad coastal plain of more than two and 1/4 million acres into pestilential marshes; malaria almost depopulated this region. Sand dunes moved inland, overwhelming forests and later on uncovering them as we see here, exposing trees and the original forest soil.

Fortunately, for the sake of comparison, one private owner refused to permit his dune area to be controlled. This active dune, 2 miles long, a half mile wide and 300 feet high, is advancing on the forest at the rate of about 65 feet a year. As one stands on this dune, stung by grains of sand in the teeth of the wind, and gazes to the north, east and south as far as the eye can see, upon an undulating green forest and realizes that this entire expanse was once moving sand as the restless giant underfoot, he appreciates the magnitude of the achievement of converting a devouring menace affecting more than 2½ million acres into a healing resource. At the present time, health resorts are established through the Les Landes Region; returns from timber and resin support thriving industries.

Such are some of the problems of flat lands.

We next survey experiences in adjusting sustained agriculture to sloping lands. In some areas of moderate slopes, where rock wall terraces are not practical, the French farmer each year digs up the bottom furrow, loads it into a cart, and hauls it to the upper edge of his sloping field and dumps it along the top furrow so as to compensate the downward movement of soil under the action of plowing and the wash of rain. Where the slopes are too steep to haul the soil up the hill each year, the soil is packed up in baskets on men's backs to compensate for the downward movement.

As population pressure in France of 200 per square mile of total area, and 547 of cultivated area exceeded the carrying capacity of the lowlands, it has pushed cultivation higher and higher up slopes, as forests have been cleared away. Torrential floods have increased notably in the past century. Extinct torrents of the Pluvial Epoch of the Ice Age have been rejuvenated and new torrents have issued forth out of bared watersheds. Floods heavily charged with debris have swept down out of these narrow valleys, overwhelming culture of the valley floors, destroying fields, houses, roads and lives. For 50 years France has been carrying out remarkable and efficient works of torrent control. We may profit by their experience in dealing with the increasing flood hazards of our mountainous regions.

The debris washed out of the mountain torrents fills and raises beds of streams causing water tables to rise in bordering alluvial lands, and creates serious problems of drainage of highly productive land,—a warning to us.

Measures for the control of torrents involve two major undertakings; one, the establishment of base levels of cutting in channels and the other, complete revegetation of the catchment area.

Adjustment of cultivation to slopes may be seen in various stages from place to place in Eastern France. We may reconstruct the stages of adjustments of farming to slopes throughout the centuries. Vineyards, fields, forests, and pasture compete for place on mountain slopes. We may see on the same slope, several stages in the development of terracing; fields may still lie at a fairly steep angle; elsewhere rock walls are built on the contour to reduce the gradient of the slopes or to level terrace the land into narrow benches. This hit or miss method of adjustment will not suffice for high hazards of rapid soil loss in our country.

In limestone mountains of Southeastern France, population pressure has pushed the cultivation line up the slopes to steep gradients. Throughout the centuries, rock wall terracing has established a sustaining and permanent agriculture on slopes up to 100 percent. A large portion of these terraces are devoted to the vine.

When the soil of terraces becomes "tired," it is turned over to a depth of 3 feet or more once in 15-30 years. Thereafter the field is sowed to a cover crop for a year or two and then planted up to vines or rose bushes for wine or perfume.

The climate at higher elevations near the Swiss border does not favor such high returns. The lands are devoted to a combination of pasturage and grain crops. Contour plowing of fields is generally used.

As we proceed into Italy population pressure of 370 per square mile of total area, and 836 of cultivated area, is also high. It exceeds the capacity of the flat lands to support its 44,000,000 people and forces the cultivation line up the mountain slopes to dizzy gradients and fixes the location of picturesque villages on points of ridges.

Although we had expected sunny skies and balmy weather in Italy, we found snow and cold weather in both the north and south. The higher mountains are given over to forests and grazing. The lands in the foreground are cultivated to various crops. We find an interesting transition in the mountain area of Southern Italy where rock walls are used to reduce gradients of the slopes rather than to level the benches.

In the absence of rock sufficient to build walls for terracing, other devices are necessary to avoid the damage of surface run-off. Drainage ditches are cut with careful attention to their gradients based upon the experience of the past, but are not entirely successful in preventing erosion on these slopes.

A considerable portion of humanity has been back up in Italy. If I were a farmer who had to farm these steep slopes and were aware of great areas of land going to waste in the United States, I would pray to the God of Heaven and earth, to know why I should have to continue to work so hard in Italy. We boast of our 3,000 miles of our frontier with Canada without a defense. It is a great achievement, but really our boasting is childish. If Italy, with its 836 persons per square mile of cultivated land bordered us on the north, we should have to share our land with them or build defenses. Remember that thousands of Americans crossed over into western Canada and have become Canadian wheat farmers.

ANCIENT LAND-USE

Such are some of the present day adaptations to the problem of adjustment of agriculture to sloping lands under high pressure of population. We now reconstruct some of the agriculture of ancient times as revealed in ruins of cities and in ruins of the land. We find in Paestum, south of Naples, one of the best preserved Greek temples of the colonial period of Greece. This temple was located on the outer edge of a coastal plain. The lands here have suffered neither erosion nor the over-wash of erosional debris. The present level of the land is the same as that on which Greeks walked more than 2,600 years ago.

We leave the highlands north of the Mediterranean where agriculture has developed under the spell of the forest and retreating ice sheets, and cross the Mediterranean to North Africa. The Roman empire was bordered on the south and on the east by the desert. The climate is marked by rainy winters and long dry summers as in California. Between the moist shores of the Mediterranean and borders of the merciless Sahara Desert, are interesting climatic profiles of 30 to 3 inches of rain, up to 400 miles in width.

(To be continued in next issue of THE AMERICAN ENGINEER)

Origin and Use of the Word Engineer

(Continued from page 16)

The man who operates a locomotive is not an "engineer" in the correct sense of the word. In England he is styled an "engine driver." By leading railroads in America he is classified as an "engineman," and one of his own leading organizations correctly uses the designation "brotherhood of Enginemen and Trainmen."

The "National Association of Stationary Engineers" was not satisfied with the adjective "stationary" prefixed to their misuse of the word "engineers," and a few years ago aggravated their trespass by changing their name to "National Association of Power Engineers." The engineers who *design* hydroelectric and other power plants and who calculate their performance are "power engineers." The *operators* of engines and boilers are misappropriating this designation.

The legislatures of 41 states have seen fit to establish certain qualifications of professional education and training as a statutory prerequisite for the right to practice engineering and for the right to use the designation "engineer." In some of the states, the application of the designation "engineer," with or without qualifying adjectives, has been rigorously restricted by law to legally qualified professional men, and supporting decisions have been handed down by the highest courts. Practically all of the amendments to the New York State engineering law enacted since 1932 show the intent of the Legislature to restrict the use of the designation "engineer" and not merely the designation "professional engineer." During the same period, the Legislature has consistently and repeatedly refused to pass any legislation fixing in the statutes the conflicting use of the designation "engineer" as applied to engine operators.

The engine operators, pretending to despise "book-learning," and possessing only a small fraction of the mathematical, scientific, and professional education required of professional engineers, claim they have sufficient practical qualifications for their work. That may be, and there is no quarrel with their rights of practice in their vocation as engine operators and boiler tenders. But that does not establish their lawful claim to the designation "engineer" with all that it connotes. The engineering profession has been working for years to win high public recognition and distinctive prestige for the designation "engineer," and does not want to see all of this effort undone and the public confused by the loose appropriation of this designation by men lacking educational and professional qualifications.

Historical, etymological, and legislative precedent are all on the side of the professional meaning of the word *"engineer,"* as *one who plans, designs, devises, or invents constructive works and machines,* and not merely one who operates machines and equipment designed by others.

Proposed Constitution of the National Society of Professional Engineers

Adopted at a Meeting of the Board of Directors of N. S. P. E. on February 9, 1940

PREAMBLE

Recognizing that service to Society, to State, and to Profession is the premise upon which individual opportunity must be builded, the National Society of Professional Engineers does hereby dedicate itself to the promotion and protection of the Profession of engineering as an educational institution and a social and economic influence vital to the affairs of men and of these United States.

ARTICLE I—OBJECTS

The objects of the Society shall be the advancement of the public welfare and the promotion of the professional, social and economic interests of the engineer by means of education, legislation, public relations, the establishment and maintenance of high ethical standards and practices through the development of a civic consciousness and the formation of State Professional Engineering Societies and chapters thereof throughout these United States.

ARTICLE II—HEADQUARTERS

The main offices of this Society shall be located at Washington, D. C., or such other place as may be designated by the Board of Directors.

ARTICLE III—MEMBERSHIP

Membership shall consist of Professional Engineers. A Professional Engineer shall be defined as follows:

(a) A person licensed to practice professional engineering in any or all of its branches in accordance with the laws of the state in which he resides or practices.

(b) A person licensed to practice professional engineering in any or all of its branches in another state.

(c) A person certified by the National Council of State Boards of Examiners.

(d) A person certified by the Board of Directors of a constituent or cooperating State Society as being possessed of qualifications equivalent to those set forth in (a), (b), or (c).

Within two years after the enactment of legislation in any state, no person in such state shall be eligible for membership in the National Society unless licensed to practice in accordance with its laws. Sections (b), (c) and (d) will no longer be operative in such state.

No person residing or practicing in a state where a member society exists may obtain or retain membership in the National Society except through membership in such State Society.

ARTICLE IV—MEMBER STATE SOCIETIES

One organization, approved by the Board of Directors of the National Society, may be recognized in each state as a member society upon written acceptance of the provisions of this Constitution. A minimum of ten professional engineers shall be required for the formation and chartering of a Member State Society. Societies affiliated with the National body shall be limited to organizations, the majority of whose membership are recognized professional engineers. Two years from the date of the adoption of this Constitution eligibility for and retention of National affiliation of a State Society will require that every professional engineer member of such State Society must thereby become a member of the National Society.

ARTICLE V—OFFICERS

The officers of the Society shall be a President, four (4) Vice-Presidents, one chosen from each of the major areas of the United States as determined by the Board of Directors, a Treasurer, and an Executive Secretary who shall be appointed annually by the Board of Directors. The officers and directors shall take office on January 1st next following their election and shall hold office until the following January 1st or until their successors have been duly elected and qualified.

ARTICLE VI—BOARD OF DIRECTORS

1—The Board of Directors shall consist of the officers of the National Society, except the Executive Secretary; the two (2) immediate Past Presidents, and one representative for each Member State Society, who shall be named by the said State Society. Representatives may be represented by alternate. The Board of Directors shall determine questions of policy and shall meet on the call of the President or of a quorum of the Board.

2—One-third of the total number of members of the Board of Directors shall constitute a quorum. If a quorum should be lacking at any meeting the Board may be canvassed by letter ballot and a majority of the votes cast shall prevail.

ARTICLE VII—NOMINATIONS

Nominations for officers shall be made by a committee of five (5) who shall be appointed by the Board of Directors. Additional nominations may appear on the official ballot upon petition of fifty members, all of whom must be in good standing.

ARTICLE VIII—ELECTIONS

Elections of officers (except the Executive Secretary) shall be made annually by plurality vote on individual letter ballots sent to all members in good standing of the National Society.

ARTICLE IX—COMMITTEES

The Standing Committees of the National Society shall be:

Legislative
Public Relations
Professional Relations
Educational
Publication
Membership

Such other committees as may be desirable shall be appointed by the President and shall perform such duties as may be assigned by him.

ARTICLE X—CONVENTIONS

A convention shall be held annually at such time and place as may be selected by the Board of Directors.

ARTICLE XI—VOTING REPRESENTATION AT MEETINGS

Voting at meetings of the National Society shall be limited to duly accredited representatives from each of the Member State Societies. The basis of voting representation for each Member State Society shall be on the basis of one vote for each 200 members, or fraction thereof, in good standing. The election or appointment of voting delegates from a Member State Society shall be as determined by said Member State Society. Each voting delegate shall present to the Executive Secretary at a specified time before each meeting of the National Society, his credentials for inspection and approval. Member State Societies may at their discretion, authorize one or more of their members to cast all or part of the votes to which the Member State Society is entitled. Voting delegates, however, must be members of the respective Member State Societies for whom they are authorized to vote.

ARTICLE XII—DUES

The dues for membership in the National Society shall be $4.00 per year, which shall include the cost of the subscription to THE AMERICAN ENGINEER. These dues shall become due and payable on January 1 of each year. The dues shall be collected by the Member State Societies and shall be payable monthly to the National Society. For Registered Professional Engineers who are not members of State Societies and who reside in states where such societies have not yet been established, the dues shall be ten (10) dollars per annum, payable direct to the National Society.

ARTICLE XIII—STATE AUTONOMY

In all matters of State or local concern, the Member State Societies have full autonomy, but may call upon the National Society for advice, counsel and assistance. The National Society may recommend State Legislation and procedure in the interests of uniformity and efficiency, but action upon these recommendations shall be determined by the Member State Society.

ARTICLE XIV—AMENDMENTS

Section 1. Amendments to this Constitution may be proposed by:

(a) A majority vote of the Board of Directors
(b) Any Member State Society
(c) A petition signed by not less than 15% of the voting members in good standing of the National Society.

Section 2. Proposed amendments shall be mailed by the Secretary to each member in good standing, together with a letter ballot, not less than thirty days prior to the regular or special meeting at which the vote is to be canvassed.

Section 3. An amendment shall become effective only upon receiving affirmative votes of two-thirds of the votes cast by members entitled to vote, provided that not less than twenty per cent of the members so entitled to vote cast affirmative ballots.

NEWS OF STATE SOCIETIES

Editor's Note: THE AMERICAN ENGINEER will carry reports of State and Chapter meetings in the issue succeeding their receipt. We must have copy by the 20th of the month preceding the month of issue. Copy received after that date runs the risk of not being on time.

NEW JERSEY

The 20th annual convention of the New Jersey Society of Professional Engineers was held in January, at the Robert Treat Hotel, Newark, N. J., President Spencer C. Hamilton, Jr. presiding.

The general committee in charge included: George W. Andress, chairman; Chester Mueller, vice-chairman and counsel; W. E. Tennyson, Secretary; and Peter H. Glannan, Treasurer.

Sub-committees were as follows:

Reception

S. Herbert Taylor, *Chairman*
John J. Bracken
F. L. Branin
M. N. Hammon, Jr.
Robert L. Hatfield
Harry Marvin
B. A. Sleeper

Arrangements

William G. Bank, *Chairman*
William H. Boardman
Ellsworth Francisco
James E. Garratt
William S. LaLonde, Jr.
Herbert Simon
Charles P. Woodnut

Publicity

Chester Mueller, *Chairman*
Hubert P. Matte
Mahlon W. Parsons, Jr.

Registration and Announcements

Howard Wittaker, *Chairman*
Arthur L. Demarest
Herbert Haufler
Edward B. Kirby
John H. Winschuh

Entertainment

Ellsworth Francisco, *Chairman*
Robert O. Bentley
Curtis C. Colwell
Paul M. Hinsdale
Otto Reiner

Exhibits

George W. Andress, *Chairman*
James W. Alden
Morris J. Baller
Curtis C. Colwell
Andrew F. Eschenfelder
Raymond A. Finley
Kenneth V. C. Wallace

Finance and Auditing

Herbert W. Heilmann, *Chairman*
Peter H. Glannan
Francis P. McCormick

Publications
(New Jersey Engineer)

Mahlon W. Parsons, Jr., *Editor*
John S. Flockhart, *Advertising Manager*
Goline Doremus
Elmer L. Peloubet
August E. Zentgraf

Chapter Representatives

Frederick D. Braun, *Chairman—State*
Frederick D. Braun—South Jersey
L. Martin Harris—Passaic
Harry Jurnecka—Union
Raymond F. Leuthy—Hudson
Leo K. McKee—Monmouth and Ocean
Hubert P. Matte—Essex
Paul P. Rice—West Jersey
Walter M. Schirra—Bergen
Allan L. Trimpi—Morris
Daniel M. Vail—Middlesex

Ladies' Committee

Mrs. George W. Andress, *Chairlady*
Mrs. William G. Bank
Mrs. Robert O. Bentley
Mrs. Frederick D. Braun
Mrs. Curtis C. Coldwell
Mrs. John S. Flockhart
Mrs. Ellsworth Francisco
Mrs. Peter H. Glannan
Mrs. Spencer C. Hamilton, Jr.
Mrs. Robert L. Hatfield
Mrs. Herbert W. Heilmann
Mrs. Ernest C. Lanterman
Mrs. Herman B. Lehlbach
Mrs. Jacob L. Lenox
Mrs. Hubert P. Matte
Mrs. Chester Mueller
Mrs. Mahlon W. Parsons, Jr.
Mrs. S. Herbert Taylor
Mrs. W. E. Tennyson
Mrs. Howard Whittaker
Mrs. August E. Zentgraf

Report of The Tellers, R. B. Brown, *Chairman.*

President,	Ernest F. Weeks,
First Vice-President,	S. Herbert Taylor,
Second Vice-President,	Russell S. Wise,
Secretary-Treasurer,	Frederick D. Braun.

SECRETARY-TREASURER'S REPORT

The Legislative activities and accomplishments of the Society are briefly outlined as follows:

1. Support of Assembly Joint Resolution No. 8 which extended the life and scope of the Geodetic Control Survey Project.

2. Support of Assembly Joint Resolution No. 9, providing for a Model Building Code in New Jersey.

3. Opposition to Senate No. 190, the perennial Lawyer's Bill which forbids persons not licensed as attorneys to represent individuals or corporations before governmental bodies.

4. Opposition to the diversion of Highway Funds for other uses.

5. In favor of Senate No. 257 as it relates to Land Title Companies in the Registration Practice Act.

6. Against the re-appointment of John C. Remington, Jr., to the State Registration Board and the engaging of Counsel to contest this appointment in the Courts.

7. Whole-hearted opposition to the passage of Assembly No. 599 changing the set-up of the State Registration Board.

8. Opposition to Assembly No. 347 requiring that all monies

collected through fees, fines, etc., by State Departments revert to the State Treasurer's office to be made available for Legislative appropriations.

The official name of the State body was changed during 1939 from the New Jersey Association of Professional Engineers and Land Surveyors to the New Jersey Society of Professional Engineers. This action, taken for brevity and conciseness, does not alter the membership of Land Surveyors in any way. They are and shall continue to be eligible to full membership in the State Society despite rumors to the contrary.

The State Society sponsored the First Annual Surveyors Conference held at Princeton University on May 20, 1939. The results were much greater than anticipated. More than 200 Land Surveyors registered at the Conference. To Professor Kissam goes a large share of the credit reflected by the success of the Conference. Engineers Arthur Noack, B. A. Sleeper, Henry Sherman, Claire Tilton, Chester Mueller and others also took leading parts. These Conferences fill a vital need and are expected to continue.

The several Committees of the Society have been very active during 1939. Detailed reports of their accomplishments are to be found elsewhere in this issue.

The office of Executive Secretary was created during the year. Without a permanent office of the Society with full-time personnel, it is considered that the office is a luxury at the present time. This condition can only be remedied by all State Society members accepting their rightful obligations to their chosen Profession and to Society. We have a number of members who only pay their dues every two or three years. This Society cannot function effectively for the good of the Profession if only a small number of members continue to carry the burden. Legislation to remedy this condition should be enacted at once. We cannot sell our Society to newly registered Engineers if our old members do not do their part!

In closing, your Secretary-Treasurer wishes to acknowledge the fine spirit of cooperation existing within the councils of the State Society and hopes that the coming year will spell advancement for the Society with a capital "A."

Acknowledgment of a fine job. well done is made to Engineer Geo. W. Andress and his 1940 Convention Committee.

The balance in the State Society Treasury on December 1, 1939, was $1,144.50. This is a 100% increase over 1938 and reflects in a measure, the improved economic conditions of the present day.

The receipts of the year were accounted for principally from the membership dues of $1,299.00 plus a return from the 1939 Convention Committee of $1,316.40.

Major disbursements were as follows:

1. Dues were paid to the National Society of Professional Engineers in the amount of $1,408.00.
2. The May issue of *The New Jersey Engineer* was published at an expense of $181.54.
3. The sum of $200.00 was advanced to the 1940 Convention Committee.
4. The salary of the Executive Secretary was $600.00.
5. Legal expenses in the amount of $200.00 were expended in the Remington case.
6. Legislative expenses of $250.00 were incurred in our unsuccessful fight against Assembly 599.
7. The Membership Committee spent $235.00 in its 1939 Membership Drive.
8. Printing, postage and secretarial supplies accounted for $225.00.

FREDERICK D. BRAUN,
Secretary-Treasurer.

TEXAS

TEXAS SOCIETY OF PROFESSIONAL ENGINEERS HAS ANNUAL MEETING

The fourth annual meeting of the Texas Society of Professional Engineers was held in San Antonio January 20, 1940. The meeting was unofficially opened with a luncheon at 12:15 p. m., at the Plaza Hotel, at which Second Vice-President Engineer H. R. F. Helland presided.

The luncheon was followed by an inspection trip to the new construction and training facilities at Kelly Field, the advanced army air corps training center. The transport shops at Camp Normoyle were also inspected.

The business session was called to order by President Walter E. Seaholm at 5:30 p. m. President Seaholm spoke briefly on the accomplishments of the past year.

The Travis Chapter cooperating with the T.S.P.E., the A.S.C.E., and the American Institute of Architects was effective in preventing any changes in the laws providing for registration of Engineers and Architects in Texas. The Enforcement Committees of the T.S.P.E. and the Travis Chapter secured an agreement from the publishers of City Directories in Texas not to advertise any person or firm as Engineers unless such persons or firms comply with the state laws governing registration. An effort was made to have the Telephone Companies agree to follow the same course.

The membership committee chairman, Engineer T. B. Warden, reported that the formation of new chapters was temporarily hampered by "split-memberships," but it was believed that three or four new chapters would be organized in 1940, if the National Society abolished the "split-memberships."

The following resolution was adopted by the Texas Society of Professional Engineers:

Whereas, a strong National Society is essential for effective action in raising the professional status of engineers in the United States; and

Whereas, such a strong National Society is necessary to give leadership to the various state societies and to coordinate their efforts; and

Whereas, individual professional engineers need THE AMERICAN ENGINEER to inform them of the problems arising in other sections of the country and of what engineers elsewhere are doing in a professional way; and

Whereas, it has come to the attention of the Texas Society of Professional Engineers that Societies of Professional Engineers in a few states permit split membership, that is, membership in state organizations without accompanying membership in the National Society of Professional Engineers:

THEREFORE BE IT RESOLVED:

1. That the Texas Society of Professional Engineers does earnestly recommend to the Board of Directors of the National Society of Professional Engineers that they set a time limit beyond which, state membership will not be permitted without accompanying membership in the National Society of Professional Engineers.

2. That this rule be put into effect within one year if the Board of Directors deem this possible, but in any event, within two years.

Engineer T. B. Warden moved that the necessary steps be taken by the National Society to admit Engineers-to-be, who have graduated from accredited universities and colleges and who lack only the necessary experience for registration, to membership of such grade as the National Society elects to designate. This motion was passed unanimously.

The following officers of the Texas Society of Professional Engineers were declared elected and were installed in office:

Walter E. Seaholm, President, Austin.
John D. Miller, 1st Vice-President, Austin.
H. R. F. Helland, 2nd Vice-President, San Antonio.
R. S. Guinn, Secretary-Treasurer, Austin.
W. E. Simpson, National Director, San Antonio.
A. C. Lloyd, Director, San Antonio.
O. L. Hazelwood, Director, Palestine.
W. L. Talevich, Director, Galveston.
E. L. Myers, Director, Dallas.

The following members were elected to serve as the Nominating Committee:

Henry Harkleroad, Austin.
E. G. Franke, Austin.
C. P. Reming, San Antonio.
B. N. Gussett, San Antonio.
S. C. McIntosh, Austin.

Newly elected director, Engineer E. L. Myers, pledged his efforts to promoting the Society objectives, stating that he was new to the organization, but that he felt there was a distinct place for it, which neither conflicted with nor infringed on the other societies.

Engineer Helland, second Vice-President stated that engineers should join this Society for selfish reasons to help raise the standard of the profession and ultimately the living standards of the engineers.

The meeting closed with a banquet at 8 p. m. in the Plaza Hotel. Attorney Leo Brewer presided as toastmaster. Judge S. J. Brooks gave a formal address on "Professional Ethics." Both Attorney Brewer and Judge Brooks are prominent members of the Bar Association. A typical Mexican Band furnished music during the meal and the entertainment was furnished by Mr. M. A. Doublet, Jr. who performed slight of hand tricks and a very convincing demonstration of hypnosis.

PRESIDENT APPOINTS STANDING COMMITTEES

President Walter E. Seaholm has completed the appointment of the standing committees for the Texas Society of Professional Engineers. The membership of these committees is as follows:

ETHICS AND PRACTICE
- Stanley P. Finch, *Chairman*, Austin.
- R. L. Colthorp, Austin.
- W. L. Eyres, San Antonio.
- Hood Pitts, Austin.
- E. N. Gustafson, Austin.

LEGISLATIVE
- H. F. Kuehne, *Chairman*, Austin.
- E. N. Noyes, Dallas.
- O. L. Hazelwood, Palestine.

ENFORCEMENT
- Doak Rainey, *Chairman*, Austin.
- E. W. Robinson, San Antonio.
- Elgin B. Robertson, Dallas.
- Marvin C. Nichols, Fort Worth.
- Gibb Gilchrist, College Station.
- L. B. Griffith, Austin.

PUBLIC RELATIONS
- Trigg Twichell, *Chairman*, Austin.
- C. P. Reming, San Antonio.
- D. V. Purington, Austin.
- J. A. Shelby, Austin.
- S. D. Breeding, Austin.

MEMBERSHIP
- T. B. Warden, *Chairman*, Austin.
- Herman F. Barsun, San Antonio.
- W. C. Peterson, Fort Worth.
- J. P. Exum, Austin.
- T. C. Forrest, Dallas.
- Chas. Peek McKnight, Houston.
- T. J. Kelly, Austin.

CHAPTER ACTIVITIES
- Henry Harkleroad, *Chairman*, Austin.
- John Broad, Austin.
- Leo Ehlinger, Brownwood.

RULES
- G. G. Wickline, *Chairman*, Austin.
- Arnold E. Wittman, Austin.
- O. B. Hartzog, Port Arthur.

RESOLUTIONS
- P. M. Ferguson, *Chairman*, Austin.
- H. F. Sutter, Fort Worth.
- R. J. McMahon, Austin.

AUDIT
- Carl E. Clinger, *Chairman*, Austin.
- J. L. Mell. Austin.
- R. M. Stene, Austin.

TEXAS SOCIETY DIRECTORS MEET

The officers, directors and members of the standing committees of the Texas Society met in Austin, February 24th, to hear the report of Engineer H. R. F. Helland of San Antonio, who was the Texas Society delegate to the National Society convention. The meeting was followed by a luncheon at the Driskill Hotel.

Engineer Helland made an excellent report of the activities at the National Society convention and presented a digest of the revised constitution which is to be submitted to the members of the National Society for a vote.

President Walter E. Seaholm presided at the meeting.

DISTRICT OF COLUMBIA

At the recent Annual Meeting of the District of Columbia Society of Professional Engineers held at the Hotel Grafon, the following officers were elected:

WILLIAM L. BACH, *President*

L. E. VANALLEN, *Treasurer*

RICHARD A. JOBES, *Vice-President*

V. C. WAGNER, *National Director*

J. I. ELLMANN, *Secretary*

At this meeting, Pres. Cleary reviewed the progress that had been made during the year 1939. Twenty-six new Members were added during his term, and the method of selecting our Membership was such that only qualified Engineers of a professional status were assured. We have made every effort to check over applicants and hope that by this process of choosing, only the highest type of Member, we will ultimately be the gainer in setting a high standard of Membership.

The license law for Engineers in the District of Columbia did not pass last year as a result of a technical error in the method of proceeding with the bill. However, the bill has been passed by the U. S. Senate, and has been recommended favorably by the District of Columbia Commissioners, and is now again in the hands of the House of Representatives District Committee. This bill is known as House of Representatives Bill No. 1128, and will be acted upon early in the 1940 Session of Congress.

Reports by the various committees were read at this meeting. Of particular interest was a report of the Employment Committee under the Chairmanship of Engineer Jobes, who reported that all cases of unemployment were taken care of by placements.

Engineer Col. Simpson spoke of the need of more active leadership on the part of the Engineer. A heated discussion followed, and as a result, plans are now in progress for a program which will tend to help the Engineer in public affairs.

Engineer Bowe, Professor of Mechanical Engineering at Catholic University, volunteered to guide a group of Members now in the process of being organized, in a public speaking forum.

J. I. Ellmann, Secretary

MARYLAND

STATE BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND LAND SURVEYORS

Forms for application for registration in the State of Maryland as a professional engineer or land surveyor are now available, and may be obtained upon request to the Board at 1616 Lexington Building, Baltimore. A copy of Chapter No. 752 of the Public Laws of Maryland, 1939, will be supplied with the application form, return envelope and instruction sheet.

The Act of 1939 to regulate the practices of professional engineering and land surveying, and creating the State Board of Registration for Professional Engineers and Land Surveyors, declares that in order to safeguard life, health and property and to promote the public welfare, only properly qualified persons shall hold themselves out as professional engineers or land surveyors, and that such persons shall submit evidence of their qualifications and be registered as provided by the Act.

Professional engineering within the meaning of the Act includes any professional service, such as consultation, engineering investigation, evaluation, planning, design, or responsible supervision of construction or operation, in connection with any public or private utilities, structures, building, machines, equipment, processes, works, or projects wherein the public welfare or the safeguarding of life, health or property is concerned or involved, when such professional service requires the application of engineering principles and data. A professional engineer is a person who is qualified by reason of his knowledge of mathematics, the physical sciences, and the principles of engineering, acquired by professional education and practical experience to engage in the practice of professional engineering.

Land surveying within the meaning of the Act includes surveying of areas for their correct determination and description and for conveyancing, or for the establishment or re-establishment of land boundaries and the plotting of lands and sub-divisions thereof.

The Act allows a reduced scale of registration fees during the first year of the Act to practitioners on June 1, 1939 who had been residents of the State of Maryland for at least one year immediately preceding date of application, and who have performed work of a character satisfactory to the Board. Applicants of this class are not subject to oral or written examinations by the Board, but this circumstance emphasizes the importance of adducing sufficient evidence from the character of their preceding work to demonstrate their qualifications to be registered as professional engineers or land surveyors. This provision in the Act becomes ineffective on June 1, 1940. The Act also sets forth other procedures for demonstrating qualifications, and other scales of application and registration fees depending upon factors explained in the Act.

Consideration of applications will involve verification by the Board of the character and professional qualifications of applicants. Much of this work will require correspondence with references given by applicants. It will expedite the issuance of certificates of registration and promote the objects of the registration law if applicants make sure that their references thoroughly understand the standards of qualification contemplated by the law and the type of evidence to be given by references. The gist of these matters is indicated in the definitions in the Act furnished with the application form.

NEW YORK

The Mid-Winter Meeting of the New York State Society of Professional Engineers, Inc. was held at the Ten Eyck Hotel, Albany, New York, Friday and Saturday, March 8 and 9, 1940. The program arranged by the Albany County Chapter follows in brief:

FRIDAY—MARCH 8, 1940.

6:00 P. M. Registration—Main Lobby. Directors and Delegates.
8:00 P. M. Executive Board's Meeting—Parlor "B", 12th Floor.

SATURDAY—MARCH 9, 1940

8:00 A. M. Registration—Main Lobby. Members and Delegates.
8:30 A. M. Committee Meetings.
Legislation—Membership—Publicity—Ethics & Practice and Resolutions.
10:00 A. M. Business Meeting of the Society—Band Box, Lobby Floor.
12:45 P. M. ADJOURNMENT.
1:00 P. M. Reception and Luncheon—Ball Room, 14th Floor.
Short Addresses by:
Hon. Chas. Poletti, Lieut. Governor, State of New York.
Mr. Lester W. Herzog, State Administrator, Work Progress Administration.
Mr. Kai Laybourn, Danish Aventurer.
2:30 P. M. Business Meeting.
5:00 P. M. ADJOURNMENT.

Frederick H. Zurmuhlen is president of the New York State Society.

Bronx County Chapter of the New York State Society of Professional Engineers held its first meeting of the new year at the Concourse Plaza Hotel recently.

Engineer Paul T. Treutler presided in the absence of President William L. A. Arctander.

The proposed demolition of the Sixth and Ninth Avenue elevated railroad structures and the changes in zoning regulations now being considered by the City Planning Commission were discussed. The Public Works Committee were instructed to report to the chapter any matters of importance to the Borough of the Bronx which appear on the calendar of the City Planning Commission.

Engineer Samuel Kessler reported that a new list of engineers eligible for assignments by the city to report on the condition of allegedly unsafe buildings is now in the course of preparation.

Engineer Nathan Beardslee was elected to membership.

The officers of Bronx County Chapter are: William L. A. Arctander; Paul T. Treutler, Vice-President; Victor De Maria, Secretary; and Solon E. Friedeberg, Treasurer.

The Monmouth-Ocean Chapter of the New Jersey Society of Professional Engineers held its monthly meeting February 7th at the Marine Grill, Asbury Park, New Jersey, L. E. Dequine of Long Branch presiding.

A representative of the R. D. Wood Company of Philadelphia presented a moving picture entitled "Pipe and the Public Welfare."

Mayor Jerue and Commissioner Clausson of Beachwood, New Jersey were among the guests.

It was tentatively decided to offer a prize each year for the best essay on "Why I Want to Become an Engineer" submitted by the graduating classes of the high schools in Monmouth and Ocean Counties.

The following officers have been elected for 1940: Engineer L. E. Dequine, Long Branch, N. J., President; Engineer Bruce Larrabee, Lakewood, N. J., Vice-President; Engineer Leo McKee, Red Bank, N. J., Secretary-Treasurer; and Engineer H. C. Shinn, Lakewood, N. J., Trustee.

C. REPLINGER,
Chairman Publicity Committee.

MINUTES OF REGULAR MEETING OF KINGS COUNTY CHAPTER OF THE NEW YORK STATE SOCIETY OF PROFESSIONAL ENGINEERS HELD AT THE BROOKLYN ENGINEERS' CLUB FEBRUARY 15, 1940

JAMES F. FAIRMAN, *President, presided*
GEORGE A. DORFMAN, *Secretary, recorded*

Approximate attendance 80.

President Fairman opened the meeting and introduced Mr. John J. Dunn, Jr., Assistant Chief, Income Tax Division of the Collector of Internal Revenue, Brooklyn.

Mr. Dunn opened up by citing various points on Income Tax in a nutshell giving information of vital interest and importance with regard to Federal Income Taxes.

Upon motion of Professor Riedel, seconded by Engineer Hartung, it was voted unanimously to elect the two vice-presidents, the Chairman of the Legislative Committee and the Secretary, as four delegates, to the New York State Convention in Albany.

Under communications, the Secretary then read a notice of hearing by the New York State Department of Civil Service scheduled to be held at 11 a. m. on Friday, February 16th, in the hearing room on the fifth floor of 80 Centre Street, New York, on the resolution of the Municipal Civil Service Commission of New York City, reclassifying in the competitive class, the engineering and architectural service.

As President of the National Society of Professional Engineers, Professor John Charles Riedel, gave a brief resume of the annual meeting held in Columbus, Ohio, on February 8, 9 and 10. He said about 1000 attended from the states of Ohio, Indiana, Illinois, Pennsylvania, New Jersey, New York, Minnesota, Maryland, District of Columbia, Nebraska, Texas and California; that Engineer Edward Larson of Cincinnati was elected the new Secretary; that each state having a voting representation of one vote for each 200 members instead of for each 500 members, as heretofore, that he delivered five different radio addresses in three days, which should be beneficial to the profession; and that the Governor of the State of Ohio was present and delivered an address; the Chief Justice of the Ohio Supreme Court, Senators and other prominent persons.

On motion of Engineer Freeman, seconded by Professor Riedel, it was voted unanimously that we go on record as being in favor of the six legislative bills, as well as the Crews & Kleinfeld bills, previously discussed by the Chapter, and noted on the State Legislative Bulletin No. 3, page 3, and that the Secretary in collaboration with the Chairman of the Legislative Committee prepare and send letters to the various Legislators and other officials, approving these measures.

GEORGE A. DORFMAN,
Secretary.

The annual meeting of the Monroe County Chapter of the New York Society of Professional Engineers was held in January, at the Hotel Sagamore, in Rochester.

Thirty members and friends were present. Engineers Marvin, Thomas and Chappell were appointed tellers. The ballots were counted and Engineer Marvin announced the unanimous election of Engineer Lewis E. Kohl for president; Engineer Joseph H. Powers for vice-president; Engineer Murray A. Bruckman, Secretary-Treasurer and Engineers Siegmund Firestone. A. P. Mussi, and William R. Storey, Directors for two years.

During the counting of the ballots, Engineer George A. Miller spoke of the necessity for his having to withdraw from the vice-presidency due to pressure of duties in the office of the District State Engineer.

Following the business session, Engineer William H. Roberts, Commissioner of Public Works of this city gave a short talk on "success" claiming that seventy percent character and thirty percent education were necessary and pointed to Frank Gannett as Rochester's outstanding example of successful application of energy and will power.

The Secretary-Treasurer reports six new members as a result of this meeting.

The Oneida County Chapter of the New York State Society of Professional Engineers was reorganized in January, with practically an enrollment of 23 new members. Chairman Charles W. Burke of the State Membership Committee of the N. Y. State Society of Prof. Engrs. spoke on the reorganization at the formation of the new Chapter, which now increases the Chapter membership in the State to 23 county chapters. The officers elected were:

President	J. B. SHAW
1st Vice-President	S. W. ZINGERLINE
2nd Vice-President	E. W. GUNDSTROM
Secretary	H. R. GRABURN
Treasurer	F. F. RINGROSE

WASHINGTON

The Washington Society of Professional Engineers is entering upon the activities of the year 1940 with a great deal of enthusiasm and with the expectations of having at least 500 members on its rolls before the end of the year.

The annual meeting of the Board of Trustees was held in January at the State headquarters in Seattle, Washington, at which time the following officers were elected for the new year.

President: James W. Carey, who is also a member of the Alaska-International Highway Commission.

Vice-Presidents: Leland J. Wright, County Engineer of Skagit County; C. F. Griggs, County Engineer of Spokane County; M. L. Tower, City Engineer of Port Orchard.

Treasurer: Harry H. Sissler, County Engineer of King County.

Executive Secretary: Walter W. Weedin, 901 Lowman Bldg., Seattle.

We have adopted a method or system for the election of State vice-presidents which may be of interest to other states besides, and I submit herewith a brief synopsis of same. We have divided the state into six districts, these districts being outlined quite definitely by natural conformation and logical transportation connections. From each of these districts there is either a vice-president or the president elected with the provision that the president and vice-president can not be both selected from one district. Each vice-president is charged with the immediate supervision of the affairs of the State Society in his particular district by organizing chapters in counties where necessary and acting as liaison officer between the chapters and the state Board of Trustees. We feel that this system will do a great deal towards solidifying the work of the Society throughout the state.

The Seattle Chapter No. 1, which meets in the city of Seattle, held its annual meeting in January and elected the following officers for this year.

President: W. L. Painter
Vice-President: W. J. Alexander
Secretary-Treasurer: Howard A. Cook
State Trustee: W. M. Meacham

Bremerton Chapter elected the following officers for 1940:

President: John H. Pattison, Co. Eng, Kitsap Co.
Secretary: Everett G. Humble
Trustee: C. C. Casad

The work of the society is progressing very satisfactorily in the state of Washington; interest is very good and we are expecting a large gain in membership this year.

WALTER W. WEEDIN
Executive Secretary
Washington Society of Professional Engineers

PENNSYLVANIA

The Johnstown Chapter, Pennsylvania Society of Professional Engineers met Feb. 16 at the Fort Stanwix Hotel, Johnstown, Pa. for the monthly dinner meeting.

The following engineers were guests:

A. L. Hertz, C. E. Paul and Howard H. Kelso, engineers for the local flood control project on the Conemaugh River at Johnstown, James C. Ayers, H. J. Bossler & R. E. James of Johnstown, A. M. Berkey & Franklin Miller of Windber, Pa. and J. Froggatt, Portage, Pa.

Dwight T. Myers of Johnstown was elected President upon the resignation of Lewis W. Gwin. F. M. Hunter of Altoona, Pa. Vice-Pres. Bernal H. Swab & H. Lee Wilson as directors.

The following engineers were appointed to act as chairman for the committees as follows:

ETHICS AND PRACTICE	PUBLICATION AND PUBLICITY
L. R. Owen	J. H. Vicroy
LEGISLATIVE AND PUBLIC RELATIONS	MEETINGS AND ENTERTAINMENT
F. M. Hunter	T. E. West
MEMBERSHIP	AUDIT
S. E. Dickey	H. F. Dorr

The next meeting of the chapter will be held in Altoona, Pa. the latter part of April.

W. I. MACCURDY

In the absence of President Frank E. Hahn Vice-President Lawrence Costello called to order the recent regular monthly meeting of the Philadelphia Chapter at The Engineers' Club. Former State President Frederick H. Dechant of Reading was a guest.

Progress was reported on the joint-publication of "The Pennsylvania Architect and Engineer" as a medium of expression within the state. It is planned that every Registered Engineer and Architect within the State should receive a copy. It is believed it can be done through joint efforts of Architects and Engineers, with small expense. He also reported that we had a ten percent increase in paid memberships in Pennsylvania to the National Society of Professional Engineers for 1939—a record of which we should be proud.

Progress report was received from Committee for publication of new directory of all registered engineers in the five adjacent counties.

It was the consensus of the meeting that we have a full time State Executive Secretary if ways and means can be found and provided the total dues be not increased above $10.00.

ALFRED A. TOWNSEND,
For Publicity Committee.

Some Unsolved Engineer's Problems, etc.

(Continued from page 15)

told me—"Many of them have discharged their intricate and specialized jobs so effectively that they have ignored any political, economic, social, or religious responsibilities." Some months ago I had a middle-aged engineering specialist tell me—"I put in seven hours a day in professional work for the company; I am my own boss the rest of the time and do as I please, and not to please someone else." If I have learned anything in my nearly forty years of professional life, it is that the surest way to "dry up and blow away" is to do what you think you want to when you want to, without reference to helping others.

Friends, what I have intended being critical about in Problem No. 3 is Mr. Average Mature Engineer's social philosophy. He will never start a revolution, that is true, but he never will march in a victorious army unless he is willing to keep in step with others, and help support the non-technical things that count in his profession and in his community life. Here is our greatest unsolved professional problem, keeping No. 3 an ordinary cooperative human being.

Problem No. 4 has to do with the older engineer. I wish I might skip this problem. I am thinking of the professional engineer of sixty years or over who is happier looking backwards than he is forward.

The true story of Engineer John Doe is an example. He was a professional engineer in Pennsylvania of about sixty years of age; honest, able, with pleasing personality, no bad habits, and in good health. He had a marvelous record of accomplishment in government and municipal work. He was vice-president of his national engineering society. He was let out of municipal work for political reasons. He could not get back because he was too fearless. Puzzled, he talked to me one day of his inability to get anything to do and felt a blight had somehow settled on him. Last fall he took his own life.

I am frankly alarmed when I see where many of the older, but good, engineers are headed. It is true that some of them have been individualists and have opposed professional cooperation, but they are and have been capable professional men. Their past earning power has been good, perhaps better than their judgment in making investments. Their activity is decreasing; there has been a reorganization in their company, or that kind of position has been abolished, or the professional work is going to younger men. They are too proud to accept public or private charity. A first-class lawyer at their age would be an honored judge, a successful physician is still loved and trusted by his patients.

Many technical and professional engineers, including those in private practice, in industry and in public work, have not been able to protect themselves against old age. The U. S. Department of Labor has said that only 30% of our professional group are protected from summary discharge or have any equity in their positions or protection for later life. (This picture has changed some in private industry during the past three years).

Of all the older engineering group, I regard the teacher as most fortunate. Of moderate earning power, he, if capable and decent, may look forward to a modest pension at 65 years. I hear some of you say that the engineer is well protected in U. S. Government service, and yet I have known of mature engineers who were forced out of a government bureau by the simple expedient of abolishing the work. The next year the work was probably started again under a new title, and while the man let go might have been called "chief back scratching engineer," the work was now carried on by a new man with the title "supervising neck-scrubbing engineer," and the government was saved. You know also that 53 years is the maximum age for employment of new engineers in government work.

Those of you who have watched or been intimate with state, county, and municipal engineering positions during the past twenty years, know without my reciting cases, what a vast amount of cooperative professional organization work there is for us to do to protect our profession from cruel injustice to the older men. There is room here for our fullest professional activities. Unless we will sacrifice for this cause, many of our smug No. 3 problem class will be in No. 4 class in a decade or two.

Perhaps in industry, one reason for the existence of our Problem No. 4 is answered by Problem No. 3. At a great industrial plant where the 1933 depression hit hard, many lines of work were abolished. I was told that some of the mature technical men in these departments were so highly specialized and had been for so long, that they could not adjust themselves into any work even in the same company and just *had* to be let go.

Well, I presented Problem No. 4. The older I grow and the more of my friends enter the 60 and 70 year class, the more earnest is my plea for professional consciousness and unity regarding them. What are we going to do about the problem?

Finally, in my talk I have been critical of your profession and my profession because we need it. You remember hearing of the school superintendent who said, "Children, I am glad to look into your bright and happy faces, because I think they need looking into." Also, I am a poor critic unless I can propose a solution for my problems. Until we recognize our own weakness and act, we will not count as a profession. Seriously, we must either change humanity or organize professionally. Human nature being what it is, I fall back on professional organization.

Most of us belong to one or more national engineering societies. We know that they never have and never will allow discussion on national questions as federal and state and city engineering reorganization, or take up the economic and professional problems I have just outlined. Every time they have tried it, they have stirred up a hornet's nest of internal dissension. But it is pleasing to belong to a national technical organization; how we love to get together and read and argue and discuss technical papers. It is professionally helpful; it is instructive; it is harmless; it is entertaining, and nobody's feelings get hurt. By the same token, how we hate to argue and discuss these intimate personal and economic problems. How we hate to appear in public print on any subject not professional. I will have to admit, that so far as the public is concerned, the voice of the engineer has been inarticulate. Lloyd George once said, "In these days the engineer has the most to tell us, but is the least able to do it." Perhaps our fault is that we have been more concerned in minding our own business than in interesting the public.

Well, *somebody* has to do it, and it has to be done through an organization. Progress is slow, and possible only if we act in unity. There is a story of a laborer who, on Saturday night, said he was going to get drunk, and gosh how he did hate it.

Let's do it even if we hate it. I mean, let us sink our likes and dislikes for the good of organization. I mean let us act as a unit. I mean something more than just passing resolutions. I mean the kind of thing I saw last spring in Pittsburgh when Engineer Ayers and a small group took their time and money to go before the City Council, and braving ridicule and hostility, stopped the appointment of a political favorite as a planning engineer.

It is not technical excellence I call for, for we have that above any other profession; it is the professional spirit and unity that can be fostered only by working and fighting together. It is not so important if we be six thousand or sixty thousand in numbers. It is vital that we professional engineers engaged in private or public work, in industry and in business, have a common society through which we can express ourselves. I mean express ourselves to further our professional and economic rights; for the welfare of our members of all ages and groups; and for the promotion of the highest professional ethics among all the diversified groups who rightly call themselves engineers.

Let us have a ten, or a twenty, or a fifty-year plan of human engineering on and for ourselves that we can work in together. Then, and then only, can we gain our rightful public recognition as a great and honored profession.

The Engineer in Business

(Continued from page 8)

to correlate cause and effect, to cooperate, to organize, to analyze situations and conditions, to state problems, to direct the efforts of others. He should know how to inform, convince and win confidence by skillful and right use of facts. He should be alert, ready to learn, open minded but not credulous. He must be able to assemble facts, to investigate thoroughly, to discriminate clearly between assumption and proven knowledge. He should be a man of faith, one who perceives both difficulties and ways to surmount them. He should not only know mathematics and mechanics, but should be trained to methods of thought based on these fundamental branches of learning. Organized habits of memory and large capacity for information are necessary. He should have extensive knowledge of the sciences and other branches of learning and know intensively those things which concern his specialities. He must be a student thruout his career and keep abreast of human progress.

Having been endowed more or less completely with qualifications and capacities requisite for a professional engineer and having developed them with the aid of educational and other institutions and contacts provided by civilized communities, the engineer is under obligation to consider the sociological economic and spiritual effects of engineering operations and to aid his fellowmen to adjust wisely their modes of living, their industrial, commercial and governmental procedures and their educational processes so as to enjoy the greatest possible benefit from the progress achieved thru our accumulating knowledge

of the universe and ourselves as applied by engineering. The engineer's principal work is to discover and conserve natural resources of materials and forces, including the human, and to create means for utilizing these resources with minimal cost and waste and with maximal useful results.

And so having found our man we will put him to work in industry and he will apply these tenets not only to the money creating effect of improved technology, but also to the solving of human problems. We will make him a composite man active in all branches of the profession, following in the footsteps of his predecessors who have founded a majority of modern industries as we know them today, during the past 75 years.

In these days of keen competition, increasing material costs, higher wages, shorter hours and on the other hand a growing demand for better products at lower prices, the field is indeed fertile for engineering research. Most managements are searching for some guidance to lead their companies out of the confusion of today's conflicting demands into a modicum of profits on their investments. What can the engineer do? Study the product, eliminate the blanket of conservatism. Is the product designed to appeal to modern prospective buyers; is full advantage being taken of streamlining with all its possible utility of design, new materials, new colors, noise elimination compactness and a thousand other factors varying with the nature of the product. What of the by-products of this industry and is full scope being given to application of all phases of the industry to all possible fields? Study of these and many other factors should be incorporated into a continuous program of engineering and scientific research in almost every industry, since they lead inevitably to expanding markets, increased employment and for the sake of our engineer we will assume increased plant facilities.

And so our engineer has a plant to build, and applying his principles and ignoring the fictitious slogan "technological unemployment," it will be built on a basis of minimum of manual, maximum of intellectual exertion or again more goods for more people at less cost. Probably the most important problem to decide at this juncture is the question of whether or not new manufacturing equipment is necessary for the new product or processing improvement developed. The answer lies in study of the present economic considerations and the future potential manufacturing process possibilities. If new equipment is called for the design or selection needs a maximum of intelligent, meticulous study; utility, economy, safety, appearance, floor space occupancy, maintenance full features are all serious factors which cannot be too carefully investigated before purchasing or building. Having decided on the type and quantity of equipment required, it now becomes necessary to delve into the most important phase of the project—plant arrangement and layout. This feature varies so with different industries that no hard and fast rules can apply but it is fundamental that the engineer shall have an intense knowledge of the orderly flow of production from the receiving and handling of raw materials, thru the processes to the finished goods and shipping. It is here that our engineer can use all his constructive vision and imagination to create an ideal arrangement without regard for building and other physical limitations and tentatively without regard for cost. Maybe this ideal can be made practical but on this phase of the project the engineer should yield grudgingly studying every step before he compromises with expediency. And so all the problems of layout are finally solved; sequence, maximum flow, materials handling, receiving shipping, storage facilities, all lined upon a basis of maximum efficiency and economy of operation, hypothetical composite.

During the foregoing activity our engineer has been concentrating part of his efforts on finding a location for the plant and we will outline briefly some of the considerations governing his selection:

1. Proximity of raw materials.
2. Product distribution factors and facilities.
3. Labor supply—wage rates and trends.
4. Labor stability.
5. Economic conditions in the surrounding territory.
6. State and local government cooperativeness and taxation trends.
7. Transportation facilities.
8. Power supply and cost.
9. Water supply and cost.
10. Building restrictions.
11. Physical advantages of site, soil bearing values, etc.
12. Building costs.

All these items and many more should be the subject of an extended survey before final selection is made.

The next move in the project involves the building and designing of a plant. I have a feeling that most managements consider factory buildings as necessary evils which are a constant drain on the profits of the business due to maintenance costs, taxes, insurance and due also to the fact that walls and ceilings limit operating facilities. Theoretically the factory building is merely a protection against the elements and on this basis should be constructed at a minimum expenditures. Actually I presume that the money expended on industrial buildings is proportionate to the amount of past and expected profits. No plant should be a burden on a business thru high depreciation, heavy fixed charges or excessive maintenance. And so our engineer will consider all these factors in his general approach to the building problem. Specifically the problems of construction are tolerably straight forward; use the topography of the site to maximum advantage, simplicity and economy of design, location and design to provide ease of plant expansion and a thousand other detail considerations. Along with construction proceeds the design and layout of plant services and here our engineers dominant thoughts will revolve around flexibility, utility and appearance, preventive maintenance and of course first costs. Power and steam costs are an important factor in almost every business and should be made the subject of a separate study. Steam and electric generating equipment have been improved in efficiency during the past few years. The extent and design of the power facilities will be dominated by the relationship between repaired investment and operating costs, and of course by any peculiar requirements of a specific industry, as well as safety and reliability of operation.

Eventually our plant is completed, a new industry is founded, and it is logical to presume that our engineer has acquired a sufficient insight into its problems to be able to operate the plant. Every day engineers are being promoted to positions of executive responsibility in industry; many of our largest corporations have been created and are being run by engineers. Engineering training should fit a man for responsibility, since the engineer deals with facts and realism instead of traditions and emotions.

And so gentlemen during the past few minutes I have painted a picture for you of engineering idealism, an engineering Utopia and having done so I would like to digress in order to examine the status of our profession with regard to these ideals. The word engineer has such a variety of uses and meanings that I sometimes feel it would be advantageous if a new word were coined to

describe the truly professional man. "Engineer" is used to describe a man who runs a locomotive, tends a stationery engine or even oils machinery. There are engineers' associations, engineers' institutes. even engineers unions and it is small wonder that the public has difficulty in sorting out the status of the various individuals and organizations; and with possibly 95% of the country's engineers employed in industry I wouldn't doubt that there is sometimes doubt in the minds of managements as to what constitutes an engineer. There is no such problem in other professions; a doctor has a definitely defined status and takes charge of his patients by virtue of his highly specialized knowledge of medicine; a lawyer assumes professional responsibility for his clients and is backed up by the natural dignity of the law. Why then should a profession which is historically one of the oldest, which has contributed so much to civilization and human welfare, rank below these other professions. I think that the answer lies in the lack of professional ideals of a professional philosophy, of professional principles which can be approved and applied by all branches of the profession.

I feel that the cure for all this lies in the strengthening and building up of organizations like the National Association of Professional Engineers with membership which will spread the professional spirit and encourage the professional approach to our problems; too all branches of all engineering organizations which are maintained on a high professional should be amalgamated in a common cause of service to the profession and service to mankind.

In this way the engineer will continue to forge to the forefront of the new world which science is making. I will close by quoting from an article which I recently read. The engineer lights the way in a very literal sense. He brings people together for better or worse, by communication and rapid transportation. He guards the food supply and replaces the hopelessness of Malthus with an embarrassing plenty. He shortens the hours of labor and fills the consequent leisure with distractions. He temporarily disrupts the techniques of whole industries, and thus alters the life habits of many people in maintaining a continually rising standard of living. He bores through the earth and under the sea and flies above the cloud. He builds great cities and also the means whereby they may be destroyed. Certainly there was never a profession that more truly needed the professional spirit, if the welfare of man is to be preserved.

Edward Larson, Cincinnati, Ohio, Named Executive Secretary of N.S.P.E.

(Continued from page 5)

me in being appointed to this post. I seek inspiration and strength to carry on that the judgment of your representatives may prove to have been wise. Before me I see a task of great magnitude, a task made doubly hard because of the pace that has been set by those who have organized and fostered this Society in the years gone by. To them all honor.

It has been my privilege to spend considerable time with your former Secretary, Engineer Willard S. Conlon. It is hard to fully realize the amount of work, the unstinting effort he has put forth. This has been done that your Society might grow. But in pursuit of our common ideal, Engineer Conlon has paid into your Society, the one priceless possession he once had, his health. This is a high price to exact from one's faithful servant. Let us wish him a speedy recovery and Godspeed in his new undertakings.

Let us now, all of us, pause and gather our strength for renewed effort. May we realize that the elevation of the Engineering Profession to a higher plane is no one man proposition. Nor is it possible for a small group of unselfish individuals to do, alone, all that must be done. To each and every one falls the task of rededicating himself to doing a part; to increasing his own sphere of activity and influence; to properly and more effectively employing his native talents; remembering always that one's own actions are not one's own concern alone. A profession is fine and noble only as the collective best in the individuals thereof is much greater than the collective baseness.

Let us seek, that so rare of all human qualities, courage. Particularly let us seek that brand of courage that comes from strict adherence to high ideals and principles, that brand which is needed in the quiet by-ways of life and the far reaches of the night; that brand which comes from the tough fiber of fine character.

We now bend our efforts to the immediate task in hand, that of doing the little, sometimes seemingly insignificant and futile, things required of us day by day to raise the Engineering Profession to a position of great effectiveness and much respect.

EDWARD LARSON
Secretary, National Society of Professional Engineers

N. Y. State Board of Examiners

The 201st monthly meeting of the New York State Board of Examiners of Professional Engineers was held in New York City on January 9th.

Of a total number of 156 applications considered (following personal interviews and prior review of all applications by each Board member), 12 were held for further consideration, 28 were rejected, 88 were assigned to the written examinations, and 28 were approved for license.

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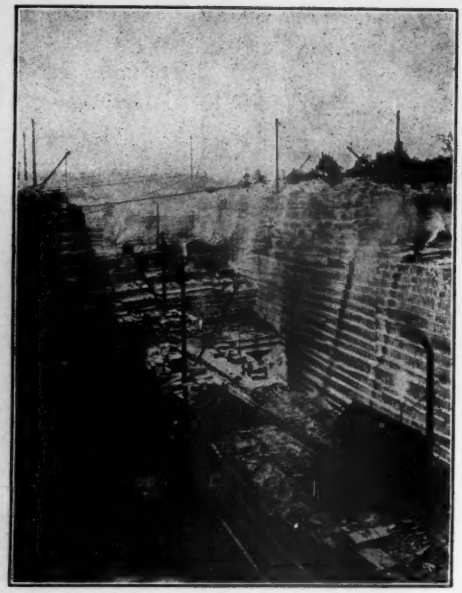

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